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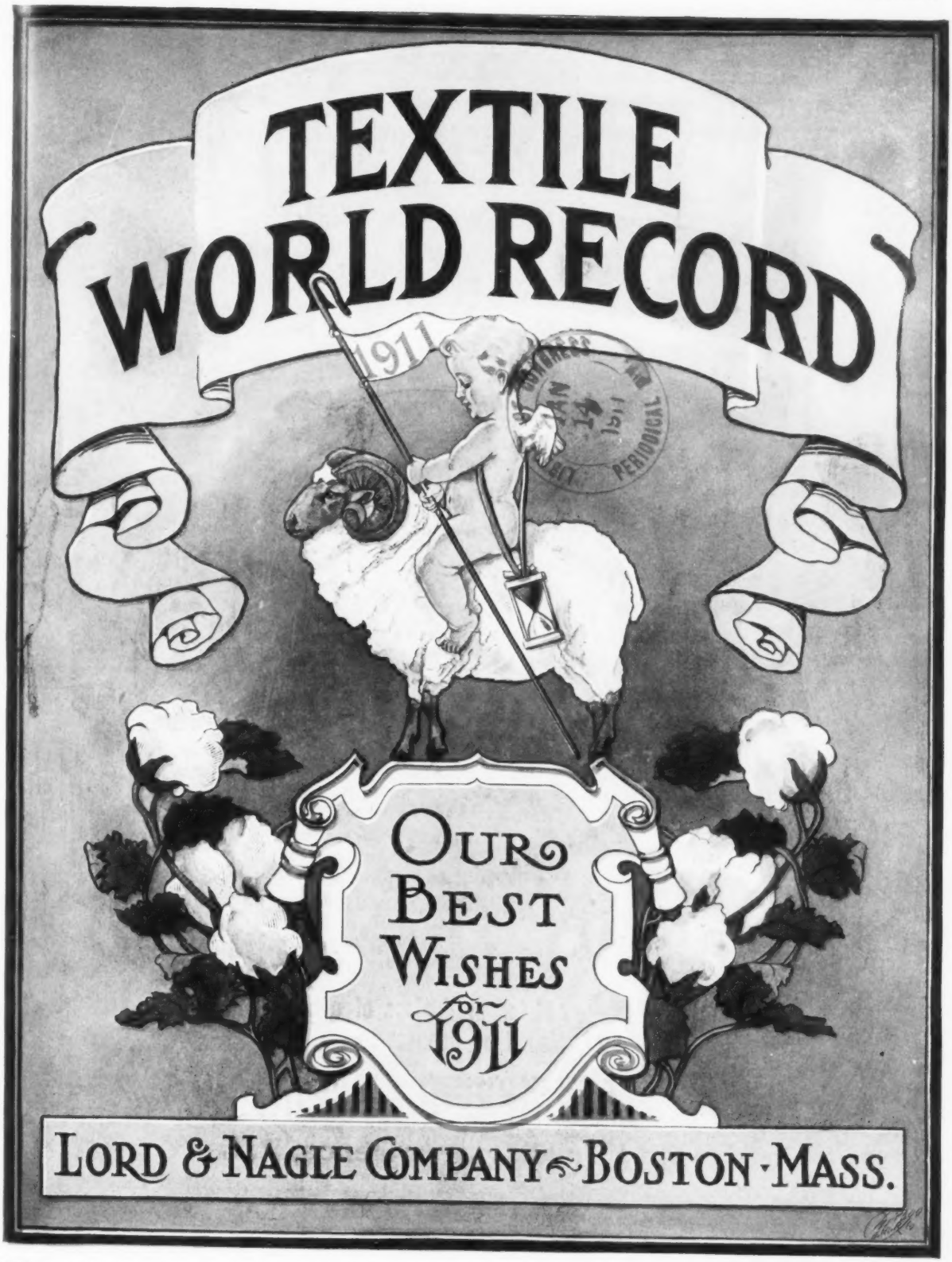

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Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

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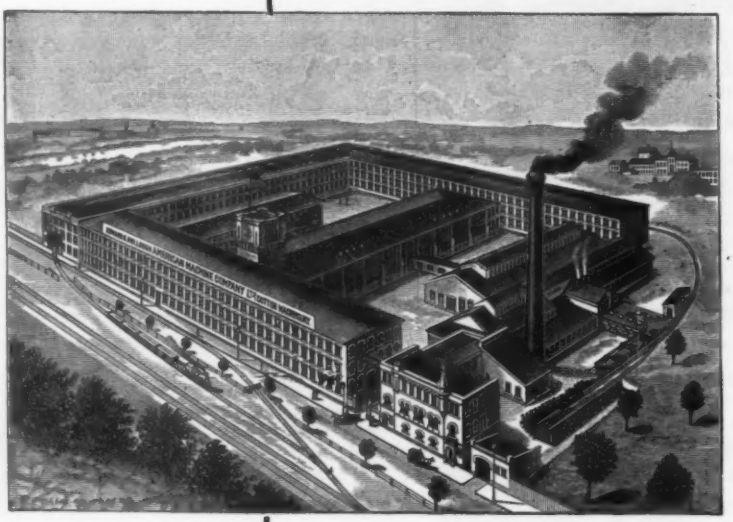

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VOL. 40 (NEW SERIES.) January, 1911 No. 4

Monthly Comment.

A "Pure Textile" Law.

For several weeks the Washington dispatches to the daily press have contained circumstantial accounts of plans for the enactment of a "pure fabric" law, that is, a law requiring every textile fabric offered for sale to be labeled so as to show the proportion of each of the materials of which the cloth may be composed. There are several reasons why such a law should not be enacted. The principal reason is that it cannot be enforced. This fact has been demonstrated repeatedly, but it has failed to put an end to the agitation because the truth has been made known to but a comparatively small part of the population. To those not acquainted with the technical conditions in the textile industry it seems as easy to analyze and determine the composition of fabrics as of foodstuffs. And so the conclusion is immediately reached that a pure textile law would be as easy of enforcement and as beneficial as the pure food and drug laws. The error in this conclusion arises from the fact that many textile materials can be distinguished only with great difficulty, while wool and shoddy, which are the special objects to which such bills are directed, cannot be distinguished at all when mixed in a fabric.

Nine years ago Congressman Grosvenor, of Ohio, introduced in the House of Representatives a bill to require textiles to be labeled so as to indicate the materials of which they were composed. At that time we exposed the futility of such legislation in an article in the "Textile World," entitled "Threatened Chaos in the Woolen Industry," which was widely distributed, copies being mailed to all the members of the Senate and House of Representatives. Congressman Grosvenor abandoned the bill soon after, a course that was unavoidable when its absurdities were made plain. We cannot state the case more clearly now than we did then, and accordingly we republish the article in this issue, believing that it will be as effective now in preventing Congress from placing on the statute books a law that is impossible of enforcement.

While such acts as the Grosvenor shoddy bill are impossible, it by no means follows that nothing can or should be done to protect the buyer of textiles against misrepresentation. For nearly twenty-four years England has had a law known as the Merchandise Marks Act, which has proved to be a protection to both manufacturer and consumer, and which should be studied by those who now propose to enforce regulations regarding the sale of textiles in the United States. Last July we published an account of this British law, written by our special English correspondent and from which the following extract is taken:

The Act was passed in 1887 and with trifling subsequent additions it remains since then untouched. It applies to two circumstances, namely to forging and falsely applying registered trade marks and to false trade descriptions of goods. It is designed to be administered with reason, and persons who can show that they had taken all reasonable precautions, who when challenged readily gave all information in their power, or who have proof that they acted innocently, easily escape from its meshes. Otherwise the penalties are sufficiently severe. The maximum punishment on indictment is two years' imprisonment with or without hard labor and a fine. On summary conviction the penalties may be four months' prison or $100 fine for a first offence and six months or $250 for a second. In any case the offending articles are forfeited on conviction. The general scheme and intention being explained, it rests next to turn to the particular definitions of what constitutes a false trade description.

Trade description means any description, statement or other indication, direct or indirect.

(a) As to the number, quantity, measure, gauge or weight of any goods.

(b) As to the place or country in which any goods were made or produced.

(c) As to the mode of manufacturing or producing any goods.

(d) As to the material of which any goods are composed.

(e) As to any goods being the subject of an existing patent, privilege or copyright.

The use of any figure, word or mark which according to the custom of the trade is commonly taken to be an indication of any of the above matters.

A false trade description means a description false in material respects as regards the goods to which it is applied, and includes every alteration of a trade description whether by way of addition, effacement or otherwise.

As will be readily understood, there is a wide difference between a law requiring the proportions of each constituent material to be marked on every lot of goods offered for sale, and a law which forbids misrepresentation regarding such goods. If any legislation relating to the sale of textiles is enacted by Congress it should be based on the principle underlying the British Merchandise Marks Act.

Trade with the Philippines.

We give below a summary of the cotton goods imported into the Philippines for the years ending June, 1908, 1909 and 1910 respectively. The first table gives the total of each class of cotton goods. The second table gives the total of all kinds of cotton goods classified according to country of origin:

COTTON GOODS IMPORTED INTO THE PHILIPPINES FOR THE YEAR ENDING JUNE.

	1908	1909	1910
Cloths	$5,323,716	$4,612,916	$5,964,117
Knit Fabrics	753,658	647,508	753,476
Tulles and Laces	107,619	97,355	100,642
Wearing Apparel	131,831	77,193	103,528
Yarn and Thread	1,218,916	1,104,640	1,200,231
All other	373,655	322,523	422,459
	$7,909,395	$6,862,135	$8,444,453

CLASSIFIED BY COUNTRY OF ORIGIN.

	1908	%	1909	%	1910	%
United Kingdom	$4,161,362	52.60	$3,499,350	50.99	$3,455,779	40.23
United States	604,742	7.63	508,229	7.40	2,043,000	24.39
Spain	592,770	7.49	500,354	7.29	451,262	5.34
Germany	502,198	6.23	429,443	6.25	421,985	4.99
Switzerland	616,652	7.79	471,885	6.87	412,864	4.88
Japan	515,354	6.40	661,719	9.65	918,339	10.87
Italy	148,962	1.88	95,392	1.39	57,428	.67
Netherlands	83,543	1.36	97,627	1.42	57,395	.66
China	158,218	2.00	218,810	3.20	353,427	4.18
France	120,305	1.52	68,871	1.02	54,508	.64
British E. I.	291,429	3.67	223,070	3.24	144,196	1.76
Other	113,860	1.43	87,385	1.28	74,270	.89
	$7,909.395		$6,862,135		$8,444,453	

During 1908 and 1909 cotton goods from the United States were subject to the same duties under the Philippine law as were imposed on goods from other countries. For eleven months of 1910 the goods from the United States were admitted free of duty, while imports from other countries were subject to the regular tariff. This accounts for the increase of the proportion of American goods from 7.4 per cent. in 1909 to 24.4 per cent. in 1910. All other countries except

China and Japan show decreases. The increase of the imports from China and Japan, in spite of the unequal competition with the United States, is a significant fact, indicating the character of the competition to be expected from these two countries with their cheap labor and silver currency.

The New Sale Note.

The new sale note for staple cotton cloths which has been adopted by a committee representing the different branches of the trade after long, careful and thorough investigation, and which has been published in this magazine, was placed on trial on Jan. 2. The deliberate and painstaking manner in which this sales note has been formulated and subjected to public criticism before its approval by the committee deserves to be taken as a model of procedure for reaching solutions of trade difficulties. Following is the committee's formal announcement:

To Buyers and Sellers of Gray Cotton Cloth:

At a meeting held in New York City on July 7, 1910, attended by representatives of the dry goods and commission houses, converters and manufacturers, the form of sale note for staple cotton cloths herewith enclosed was adopted for trial use. Subsequently the American Cotton Manufacturers' Association and the National Association of Cotton manufacturers approved of the form. It is planned to inaugurate the trial use of this sale note beginning Jan. 2, 1911. Will you not endorse this effort by using this form in your own transactions beginning with Jan. 2, 1911, or as soon thereafter as feasible?

Abuses in the Silk Trade.

The Silk Association of America has started a movement to correct the abuses in the marketing of silk goods. These include arbitrary cancellations, unjust claims for imperfections, dangerously long credits and other evils which now prove a heavy burden on silk manufacturers. At a meeting last month the board of managers of the Association named the following committee to take charge of the work:

Charles Cheney, treasurer of Cheney Bros., chairman; Samuel McCollom, of McCollom & Post, Paterson; Albert Tilt, treasurer of the Phoenix Silk Manufacturing Co.; Conrad Buhler, of Peierls, Buhler & Co., 453 Broome St.; Samuel Eisemann, of Samuel Eisemann & Co.; Samuel Kridel, of J. Kridel, Sons & Co.; Emil J. Stehli, of Stehli & Co.; Robert J. F. Schwarzenbach, of Schwarzenbach, Huber & Co.; George A. Post, secretary and treasurer of the Post & Sheldon Corporation; Charles G. Taylor, president and treasurer of the Portland Silk Co., Middletown, Conn.; Samuel Holzman, of the Holzman Silk Manufacturing Co., Paterson; Dwight Ashley, Jr., secretary of the Ashley & Bailey Co.; Jeerome C. Read, president of the Association, president ex officio; Ramsey Peugnet, secretary.

The evils to be corrected have become more serious during the prevailing dull times in the silk trade. When business is good the seller is able to enforce his terms to a greater or less extent, but when depression comes the buyer can force the manufacturer to submit to conditions that mean a heavy loss. The Silk Association proposes to frame rules from the conduct of the trade and submit them for approval to general2 meeting of representatives of all branches of the silk business.

Mill Labor in India.

The Indian Textile Journal in a recent issue gives a discouraging account of labor conditions in India, from which one naturally reaches the conclusion that the countries competing for the cotton goods trade in neutral markets have little to fear from Indian goods. Because of the Indian population of 300,000,000 Americans have led themselves to believe that Indian mill owners had an inexhaustible supply of cheap labor always available. But here came the Indian Textile Journal with this report:

An active correspondence has appeared in the local journals on the shortage of mill hands in which a great many well known statements are repeated, while leaving the subject very much where it was before. An abortive attempt was made a few years ago to import labor from other districts, but the importers had no hold on the workpeople who, in many cases, detested the restrictions of mill life and would not stay. Foremost among the causes must be placed the high cost of housing and food, the former of which is more likely to increase than diminish. These, along with the fixed aversion of the hands for any increase in the rate or quality of their work and for steady attendance, form the greatest of our industrial difficulties.

The Journal has as poor an opinion of Indian cotton mill owners and managers as of the Indian employes:

Of remedies such as exist in other cotton manufacturing countries there is no visible trace. At the top we have a class of mill agents and

owners who, having had no industrial education themselvts, see no need of such training for their sons, for not one of the latter has appeared during many years for the study of textile matters at our Technical Institute.

The mill owners and agents are not only ignorant, they are corrupt, if the Journal is not misinformed:

Travelers for British makers of mill stores and machinery tell very unpleasant stories of their recent experiences in India. They say that at no time have the demands for commissions been so great or so numerous as at present, and they add that the art of making difficulties has become so perfect that refusal would mean the certain loss of business. If the mill agent were appealed to, his ignorance of the internal economy of a mill would render him useless as an arbitrator. The managing director of a firm of manufacturers in England, who recently came to Bombay, remarked that the commission per cent. demanded by a single blackmailer at an up-country mill represented twice the amount of dividend paid to his shareholders. Articles he sold for one shilling in England had to be charged two and sixpence in India in consequence, and as this applied to almost everything that is supplied to a mill, the cost of manufacture is necessarily increased in the badly managed mills.

Added to ignorance and graft is a spirit of hostility between employers and employed:

A spirit of antagonism is produced and maintained between employers and employed that shows itself in frequent disturbances and strikes, and this mischief is aggravated by political agitators, whose influence does not seem to have diminished since the Tilak trial. Skulking has now become one of the national customs, and any attempt to check it is bitterly resented. Local time is insisted on, instead of standard time, as if a change of hours would make any difference to their wages or convenience, and some agents are reported to avoid the interior of the factory on account of the marked discourtesy of the mill hands. With all this there is no more real unity among mill agents and owners than at any time during the past twenty years. And the mill hand knows it.

The case is not only bad, but the Journal evidently has very little hope of any improvement:

One thing is certain. The mill cooly is utterly devoid of any capacity for self-improvement. As he is now, so he will remain, as regards ambition or desire to rise in the social scale. Even if he becomes detached from field labor his children betray no hereditary skill as operatives. If environment has any influence on their character it is manifested in a love of drink and amusement. With such raw material in the shape of labor, the Indian manufacturer has to compete with his foreign rivals. They have machines, cotton and power in common, but in the matter of discipline, skill and diligence Indian labor stands at the bottom of the scale.

Conditions in India must be bad, but they are not hopeless when a criticism as scathing as this is published by an Indian trade journal. Honest, outspoken criticism of evils is the forerunner of remedies. The trade journal that suppresses the truth, covers up abuses and defends the wrong is doing its trade a very poor service.

Net Weight of Twines

In our November issue we commented upon the announcement of a number of dealers in linen flax threads and twines that they would hereafter sell at net weight with full allowance for tare. We learn that the Smith & Dove Mfg. Co., Andover, Mass., have been following this practice for a long time. This custom will doubtless become universal in the linen thread and twine trade.

THE NATIONAL WOOL GROWERS' ASSOCIATION.

Far more than the ordinary interest attaches to the meeting of the National Wool Growers' Association at Portland which is being held as our January issue goes to press. The tariff is the leading issue before the convention and with commendable fairness the growers have extended invitations to attend and discuss this question to representatives of all branches of wool growing and manufacturing. The program as announced for the meeting includes the following addresses:

Edward Moir, Marcellus, N. Y., "Schedule K from the Standpoint of the Carded Woolen Manufacturers."

William Whitman, Boston, Mass., an address on the tariff.

Theodore Justice, Philadelphia, "The Tariff on Wool and Woolens."

C. H. Brown, Washington, D. C., "The Payne-Aldrich Tariff and Wool Imports."

Fred H. Blume, Sheridan, Wyo., "Protection for Wool and Woolens."

Peter G. Johnson, Blackfoot, Ia., "Schedule K."

C. B. Stewart, Salt Lake City, "What Sheepmen Can Accomplish."

Judge Stephen A. Lowell, Pendleton, Ore., "Forest and Flockmasters."

Sam Ballantyne, Boise, Ida., "Public Wool Auction Sales."

U. S. Grant, Dallas, Ore., "The Mohair Industry."

Other prominent men are expected to be present and make addresses.

We have received an advance copy of the address by Mr. Blume, who is a Senator in the Wyoming Legislature. He discusses the wool tariff question in a broad, liberal and fair-minded spirit, and what he has to say will be of great interest to our readers as showing the wool growers' point of view. Mr. Blume said in part:

It is apparent that a substantial benefit accrues to the American wool grower from the tariff, and it behooves them, in view of the agitation for revision of schedule K, which is bound to come, to stand united, and use all possible efforts in order to retain the protection to which they are entitled.

A STEP FORWARD.

I now take a step forward. I may tread on delicate ground. No man in public life in the west, so far as I know, has ventured far into the field of criticism of schedule K. But the time has come when plain speaking is necessary. The agitation in the east in reference to that schedule has become so vehement and persistent that it is absolutely essential for the wool growers, for their own protection, to analyze the law, take the position against discriminations, and take a stand which accords with reasonable justice to all.

We cannot, of course, overlook the interests of the manufacturer. In this protection the wool grower is vitally interested. If the manufacturing industry suffers, wool finds no profitable market. But the carpet manufacturer asks for cheaper wool at the expense of the wool grower. The worsted markers are in a quarrel with the carded woolen men, and they both want your support. Yet you ought not to be expected to settle the strife between them, neither ought either side expect or want you to suffer by reason of their trouble. It is unfortunate that your interests are so closely linked to those of the manufacturer. But they are and you must make the best of it.

A COMBINATION WITH THE PEOPLE.

Heretofore the wool growers have been in combination with the manufacturers of worsted goods. An agreement between them, and a reasonable understanding with, or pacification of the carded woolen men, up to and at the time of the passage of the Dingley law, created satisfaction with schedule K, or at least drowned the voices of opposition. But the time has come when you are compelled to make a combination, not alone with the worsted men, not alone with the carded woolen men, but you are forced also to make a combination with the American people, who have expressed their dissatisfaction with the law in no uncertain tones. A revision seems to be coming. Ohio, New York, Indiana and the Middle States generally have adopted the view favoring a permanent tariff commission, and a revision of one schedule at a time. The tariff on wool and woolens will probably come in for the first round. What position are you to take in the struggle which will ensue? If you take a stand of impartiality toward all, yet of injustice to none, no person can, certain not reasonably, take exceptions thereto. The great sheep industry, making happy homes for thousands, wresting substance from deserts, limited only by the confines of the oceans, is certainly entitled to your first consideration.

THE 4 TO 1 RATIO.

The law imposes a duty of 11 cents a pound upon unwashed wool of the first class, 22 cents upon washed and 33 cents upon the scoured wool of that class. It assumes that the shrinkage is 66 2/3 per cent.; that it takes three pounds of unwashed wool to make one pound of clean wool; that a further loss of 25 per cent. ensues up to and including the time when the wool is woven into cloth; that, therefore, four pounds of wool in the grease are necessary to make one pound of cloth. Inasmuch as the law assumes that the manufacturer is compelled to pay his tariff either by way of tax to the government or by way of additional price upon the home product, it undertakes to compensate him for such expenditure, and justly, so as to place him upon an equal footing with the foreign manufacturer who has free wool.

From this arises the so-called compensatory duty of 44 cents per pound of cloth, which the law gives him in addition to the 50 per cent. ad valorem protection against the cheap labor of Europe. Hence the now famous ratio of 4 to 1, which originated in 1867, and which has stood practically unmolested to the present time, except under the Wilson bill. There are those who think that this ratio is sacred; they deem sacrilegious those who have attacked it, or who have questioned the wisdom of any part of schedule K. But conditions which existed half a century ago have changed to some extent; and some men, lately, have ventured the suggestions that perhaps errors crept into the woolen schedule which are now becoming apparent; that the manufacturers obtain, at the expense of the wool grower, compensatory duty to which they are not entitled; and that whatever may have been the facts in the past, a system can now be adopted which will give the compensatory duty where it belongs, and stop all contention with reference hereto.

Bear in mind that this compensatory duty is based on the theory that the wool that makes up the cloth, and on which the duty is paid, shrinks (in scouring) 66 2/3 per cent., and that it takes four pounds of wool in the grease to make one pound of cloth. But the facts are that the actually imported wool shrinks no such amount as the law assumes. The theory of the law gives you 11 cents' protection for each unwashed pound; it gives you 33 cents' protection for each scoured pound. But the wording of the law is a delusion, and the facts fall very far short of corresponding with the theory. Not a pound of scoured wool, at least intentionally, is brought here. Some of the wool is permitted to be imported in a skirted condition. The skirting diminishes the shrinkage. Some classes of wool shrink considerably less than 66 2/3 per cent., and it is this class of wool that is actually imported into the United States.

SHRINKAGE OF IMPORTED WOOL.

The importer wants the lightest shrinking wool, so as to pay as little as possible on the dirt contained in the wool. If the wool imported shrinks 66 2/3 per cent., it will, of course, cost the importer 11 cents for the wool in the grease and 33 cents for each clean pound. If it shrinks only 20 per cent., that is, if he gets eight-tenths of a clean pound out of the greasy wool imported, this eight-tenths of one pound costs him 11 cents, which makes 13 3/4 cents for a clean pound. If the shrinkage is 50 per cent., each clean pound costs him only 22 cents. If the shrinkage is 40 per cent., each clean pound costs him only 18 1/3 cents, instead of 33 cents, as is contemplated by the law.

Thus, let me repeat, it is of the greatest financial interest to the importer to obtain the wool that shrinks the least. Hence has arisen a commercial phrase and there has been established a regular trade in wool "fit for importation into the United States," and the wool that goes into clothing, actually imported into this country, shrinks, it is estimated, on the average little more than 40 per cent.

THE ACTUAL PROTECTION TO THE GROWER.

This amount of shrinkage, as stated before, means a cost of 18 1/3 cents, on the average, for every scoured pound imported, and which in turn means, upon the principle heretofore stated, that, other conditions being equal, this amount and no more, will be added to the price of the home product.

Territory wool shrinks approximately 66 2/3 per cent. A clean pound of this, which is equivalent to three pounds in the grease, is protected by 18 1/3 cents; or in other words, the growers of this wool are protected, on the average, to the extent of only 6 1/9 cents on every pound of wool in the grease, instead of to the extent of 11 cents, as contemplated by law. They receive a little more than one-half of what they were promised. They have been deceived into believing that the law meant what it said. And yet so sacred has become this law that anyone daring to assail its hallowed name has been branded as a traitor to protection and a common enemy to mankind. The estimate I have made herein is conservative. The differences in freight rates, and value, and skirting will probably reduce the actual protection still further.

THE WOOL GROWER DECEIVED.

While the law, thus, has utterly deceived the wool grower, it has at the same time dealt magnanimously with the maker of goods who imports and uses low shrinkage wool. He pays on the average 18 1/3 cents' tariff for every scoured pound. Figuring that the further shrinkage in the process of manufacturing cloth is 33 1/3 per cent., instead of 25 per cent. as the law assumes, that is, that it will take 1 1/2 pounds fo clean wool to make one pound of cloth, which, I think, considering the value of the by-product, is ample measure, this would run the tariff cost of cloth up to 27 1/2 cents per pound. But the law gives him instead a compensatory duty of 44 cents. It gives him approximately 16 1/2 cents as compensation for money, intended as protection to the wool grower, and supposed to have been paid out, but which was not in fact done, and goes, therefore, into the pockets of the manufacturer, excepting in so far as competition at home reduces the amount of this special benefit.

The chief difficulty in the woolen schedule lies in the fact that it is based upon an incongruity. Nature has put an insuperable obstacle in the way of a just operation of the present law. Some wool shrinks 80 per cent. of each pound, leaving only two-tenths of a clean pound; some wool shrinks only 20 per cent., leaving eight-tenths of a clean pound. No person buys wool for the dirt contained in it. Yet the man who received the two-tenths is asked to pay the same tax as the man who received eight-tenths. The wool grower is not the recipient of any benefit of such discrimination. The lower the shrinkage of imported wool, the less protection for you; the higher the shrinkage of imported wool, the greater the protection for you. The benefits of the inequality accue to the importer of low shrinkage wool. The carded woolen people contend that they are compelled to use the high shrinkage kind, and that the worsted makers are the only beneficiaries. I am not here to discuss the merits of the contention between the manufacturers. But inasmuch as the wool growers are vitally interested in the question, which side will they take, what attitude should they assume?

THE TARIFF ON WASHED WOOL.

Besides, while wool of the first class, in a washed condition pays, under the law, 22 cents a pound, wool of the second class, otherwise called combing wool—imported mainly from England and Canada—pays in a washed condition only 12 cents a pound. The latter is a luster wool. Its value is about the same as wool of the first class; its natural shrinkage is low, and when brought over here, as it is in a washed condition, its shrinkage is about 25 per cent., costing the manufacturer about 16 cents a clean pound, instead of 36 cents as the law contemplates. Why this discrimination? The wool grower receives no benefit from it, but is injured.

A PROPOSED SOLUTION.

What, then, is the solution of this problem? In the first place, it seems to me, that English and Canadian combing wool should pay the same tariff that is paid by clothing wool. This would be decidedly advantageous to the wool grower. It would, at the same time, do away with any claim of injustice and discrimination between the two classes of manufacturers. In the second place, no sound reason can be advanced why the tariff should be paid upon the basis of wool in the grease. The tax should be paid upon the wool, the clean wool, not the dirt. Some have contended against the ability of the customs officers to measure the scoured contents of a quantity of wool with accuracy, and that mistakes and errors, varying from two to five per cent., would be bound to occur. However all wool, that in Oregon and that in London, is bought upon the basis of the scoured contents. The wool buyer from Philadelphia comes out here, examines your wool, makes his estimates of the scoured contents, and upon

that bases his price. The same thing is true in the great wool markets in London. And in any event, a method of administration, permitting errors of from 2 to 5 per cent., is greatly preferable to a system of taxation in which it is possible that one man pays 400 per cent. more tariff upon the same weight of clean wool than another.

That an amendment to the law, adopting either of the methods mentioned (duty on the scoured weight or sliding scale based on the shrinkage), would be infinitely better for the wool grower, and that it would at the same time place the manufacturer upon an equal footing, seems to me to need no argument. That the idea should be embodied into law, seems to me beyond question, if the law is capable of successful operation, and I believe it to be so, under the advantages of the scientific knowledge of the present day. If the Boston wool buyer is shrewd enough to judge the wool on the plains of the mountain states, the government ought to afford experts to do the same in the customs houses. If conditioning houses in Europe give satisfactory results in the estimate, no reason should exist why we should lag behind. While it is well enough to move slowly in the dark, we should not hesitate while in the light; and the age and supposed sanctity of the law, or an idea, should not be a bar to the march of progress.

It was extremely unfortunate that schedule K was not, at least in the minds of the people, settled in the last revision. Changes and threatened changes in the tariff always have a demoralizing influence upon industry. The low market on wool during last year was to a large extent due to the unsettled condition of this problem, and it will not be settled until it is settled right. While the worsted men must be amply protected, while due consideration must be given to the wants and needs of the carded woolen men, the great industry of the sheep men must not be neglected; and if in the coming struggle you look after your own interests, while at the same time taking a stand in accordance with the principles of justice and right, none would have any just cause for complaint.

AD VALOREM DUTIES.

There is a feature of this problem which I cannot overlook. That is the questsion of assessing an ad valorem duty on wool, instead of a specific duty. To adopt the ad valorem principle would be very injurious to your interests, for the reason that when the price is lowest, you need the duty most. To illustrate, suppose the duty to be 50 per cent.; when the price of the imported wool is 15 cents per pound, the duty paid would be 7 1/2 cents per pound; but if the price of the wool is at 5 cents, the duty would be only 2 1/2 cents per pound. Yet, in the latter instance, you need the 7 1/2 cents' protection considerably more than in the former. It is not an answer to say that the duty upon woolen goods, outside of the compensatory duty, is ad valorem, because the ad valorem duty in that case is assessed for protection mainly against the cheaper labor of Europe. The price of labor does not vary materially from time to time, while the price of wool varies sometimes enormously from year to year, and even from one season to another.

It will be useless for you to attempt to have the law remain without changes. It is useless to appeal to the age of the present law; age never lends enchantment to inequality or injustice; and the halo of the past becomes extinct in the light of the features of today, which are practical, and right at the same time.

THE CARDED WOOLEN MANUFACTURERS' ASSOCIATION.

This association held its second annual meeting at the Murray Hill Hotel, New York, on Dec. 15. At the business meeting in the forenoon reports were presented by the secretary and treasurer, the latter showing the finances of the organization to be in a satisfactory condition. After discussion it was decided to change the by-laws so as to hold the annual meeting on the third Thursday in January. It was also resolved to increase the number of directors to nine, and the number of vice-presidents to three.

The nominating committee named by President Moir, consisting of Mr. Hamill, Mr. Park and Mr. Dickey, reported the following names for the respective offices:

President, Edward Moir, Marcellus, N. Y.; Vice-Presidents:—Gordon Dobson, Pittsfield, Me.; W. A. Dickey, Jr., Oella, Md.; Thos. J. Kitson, Stroudsburg, Pa.; Treasurer, William Park, Stafford, Conn.; Secretary, Arthur Wheelock, Uxbridge, Mass.; Directors:—H. J. Hamill, Germantown, Pa.; Robert Bleakie, Boston, Mass.; Mark D. Ring, Philadelphia, Pa.; Chas. P. Bentley, Norwalk, Conn.; John Houston, Guilford, Me.; Frank Mehling, Cleveland, O.; W. A. Tierney, Cohoes, N. Y.; A. I. Mitchell, Stafford, Conn.; H. G. Niles, South Bend, Ind.

President Moir stated that he would be very glad to have someone else selected for the office of president who could give more time to the work. His remarks were interrupted by Mr. Hamill who said he felt sure he was speaking for the association in saying that they could not think of allowing Mr. Moir to retire; that his work had been great, and appreciated not only by the members of the association, but throughout the country, and he must insist that Mr. Moir continue to serve as president. These remarks were received with applause and the motion to elect was carried unanimously.

President Moir read an invitation from the National Wool Growers' Association to attend the convention at Portland, Oregon, on

Jan. 4, and stated that it would not be possible to accept, but that he would send a letter instead, outlining the position of the Carded Woolen Manufacturers' Association. President Moir then read a letter written in 1871 by Edward Harris, of Woonsocket, R. I., and published in the Boston Advertiser, in which Mr. Harris made the same complaint regarding schedule K as the carded woolen manufacturers are making now. After the business meeting luncheon was served and addresses made by a number of those present. Mr. Moir said in part:

PRESIDENT MOIR'S ADDRESS.

I believe it a matter for congratulation by the members of this association not yet two years old, on the great amount of work done by it in bringing to the attention of the public the great injustice we, who operate mills by the carded system, suffer, and also, on the results of that work, as evidenced by the recent election. We find prominent stand-patters in Congress now ready to join with progressive Republicans in revising some of the tariff schedules, a marked contrast from a year ago.

It is but two years since the open work of revising Schedule K began, but the secret work had been begun four months before, and so far as Congress and the public were concerned, had been finished, and only needed its crowding through an unwilling House and Senate to complete the infamy. You are all familiar with the history of the compact between the worsted spinner and the Western woolgrower, so that it is useless my repeating myself on that subject.

Many of you know how our deputations that went to Washington were received by those in control of the machine. Their treatment was such that many of our own people and friends said, "It is no use. We can't do anything, so let us make the best of it."

It was only last week at another meeting, we were treated to the same kind of talk, much of it from those who are benefited at our expense, and some of it by the pessimist, whom we always have with us. Boston is noted for a famous tea party over taxation without representation. The men of that day had to combat the pessimist as well as the enemy. It was the same during the civil war. Many cried out to stop the war, failing to recognize that there was a great issue to be settled at any cost.

In the present battle, we have the pessimist with us who cries, "Let us stop talking about the tariff and let business settle down," overlooking what we are fighting for. Until this fight is settled on the basis of justice to all consumers of wool, and made fair in the interests of the consumers of cloth, this agitation must go on until it is finally settled, and settled for all time, that schedules of the tariff bill, when revised hereafter, shall be done on the basis of equity and not on the bought and paid for order which was very evident in the late pretended revision.

At the meeting in Boston, January 26, 1909, the position of the carded wool manufacturer and his demand on Congress were so clearly and concisely put by Mr. Robert Bleakie, that I quote from his address the following:

"I do not ask that the present tariff be lowered or raised in the slightest degree. I ask that wool be put on an ad valorem basis, so that I shall not be forced to pay a higher tariff tax on my wool for making cloth than the worsted spinner pays on his. Under equal conditions I will hold my own with him. Give me a chance to draw into my mills Cape wools and these other fine wools and I will reproduce so closely a good many of the unfinished worsteds now in the market that the average consumer will not know the difference between these worsteds and my carded woolens. I am denied that privilege. We want to be straight on this point. We should say to the American public: You have elected to have taxed wool and a tariff for protection. We ask you now to make the tariff equitable to the carded woolen manufacturer as well as to the worsted spinner. Make it so that the wool I put on my cards will bear no heavier tax than is placed on the wool used by the worsted spinner. This is not being done now. That discrimination is what I am here to protest against and to help correct. On that issue I believe we will win before the American people, but it is an issue on which we can afford to go down to defeat."

Shortly after, the Maine Woolen Manufacturers' Association was formed, with Mr. Gordon Dobson as president. This association took up the work of presenting our grievances to the Congress and also appealing to the public for fair play. In a letter to Mr. William M. Wood, Mr. Dobson set forth our demands very forcibly, so forcibly and clearly that no reply has yet been had to his letter. Mr. Dobson, in closing his letter, said:

"The carded woolen manufacturers have appealed to the Ways and Means Committee for fair play in vain. If the House of Representatives denies it to them they will appeal to the Senate. If justice is refused there they will appeal to the President of the United States, who has proclaimed his belief in the theory of cost differences as the true principle of protection, who has announced his devotion to the square deal, and who, since his election, has declared that tariff revision must be honest and thorough, and intimated that a veto awaits a dishonest bill.

"If he fails to give us the justice he can give if he will, then the carded woolen manufacturers will carry their case to the court that makes and unmakes Presidents, Senates and Houses of Representatives, the American people, confident that they sooner or later will strip from the tariff law the special privileges that are now giving the worsted spinners such great advantages at the expense of the wool growers, the carded woolen manufacturers and the consumers of the country."

After that letter was written, the National Association was formed, and in furtherance of the work many letters have been written and circulated through the press and magazines, and also leaflets have been circulated by the association for the

information of the public. Deputations went to Washington to interview the committees of both Houses and we finally carried our case to the President himself, all with no success, but when the time came we appealed to those who make and unmake Presidents, with the result you all know. It could not be otherwise, as, in my judgment, no party can remain in power whose leaders deliberately break faith with the people.

President Moir was followed by Robert Bleakie, who spoke briefly. He said in part:

I am in the fight for all it is worth, and I will not let up until ad valorem is an assured fact. I do not stand for free wool nor am I an advocate of free wool, but if wool is to be taxed it should be taxed equally. If one class of manufacturers can import wool with a duty of 12 to 15 cents and another class has to pay a duty of 30 to 40 cents on its wool, the latter class is handicapped.

Remarks were also made by Richard Olney, 2d, of Boston, and William Park.

A "Pure Textile" Law.

[This editorial was originally published nine years ago in the January, 1902, issue of the "Textile World Record," for the purpose of defeating the Grosvenor "shoddy" bill, an object that was successfully accomplished. It is republished now for the instruction of those statesmen who are agitating for the enactment of what is popularly known as a "pure textile" law.—ED.]

The so-called "shoddy bill" requiring textiles to be labeled with tags showing the percentages of different fibers in the goods has been introduced into the House of Representatives by Congressman Grosvenor of Ohio. The first section reads as follows:

That for the purposes of this Act the words "pure wool" shall be understood to mean sheep's wool, which has not been previously used in the manufacture of any other article, goods, or fabrics, and the words "woolen goods" to mean goods or fabrics composed wholly of such wool.

That for the purposes of this Act all manufactures made in imitation of woolen goods which are not composed wholly of pure wool shall be known as "mixed goods."

The intent of this section is and its effect would be to discredit all textile fibers except sheep's wool which has not previously been used in the manufacture of goods. This is somewhat clumsily concealed by the phraseology of the bill in order to conform to the political exigencies in Congress, but in the bill proposed by the National Live Stock Association at Chicago this intent is stated with a frankness that deserves the highest praise. This last named document declares in a straightforward farmer-like fashion that:

The word "shoddy" shall be understood to mean all fabrics made wholly or partially of waste, hair, mungo, wool extract, waste woolen rags, and all fabrics in which wool in any proportion is used in connection with any of said fibers, materials or fabrics, and all articles in which cotton, linen, hair or other fibers or substances are used in connection with wool or woolen fibers in the manufacture of any cloth, fabric or any other article.

The prejudice created against these other fibers by branding them as inferior when mixed with wool would inevitably be extended to the fibers even when not so mixed. Cotton, linen and all other textile materials except new wool must bear the brand of inferiority. They do not come from a sheep's back, and must therefore necessarily be a cheat and a sham to be branded with some degrading mark in order to guard the people against purchasing and using them.

We produce annually in this country about 5,000,000,000 pounds of cotton and supply three-quarters of all the cotton used in the world. The proposition to affix to this great product and to all the fibers not obtained from a sheep the stamp of inferiority is interesting, particularly to the representatives from the Southern States. According to this first section the long, lustrous mohair of the Angora goat, not having grown on a sheep, must likewise be branded.

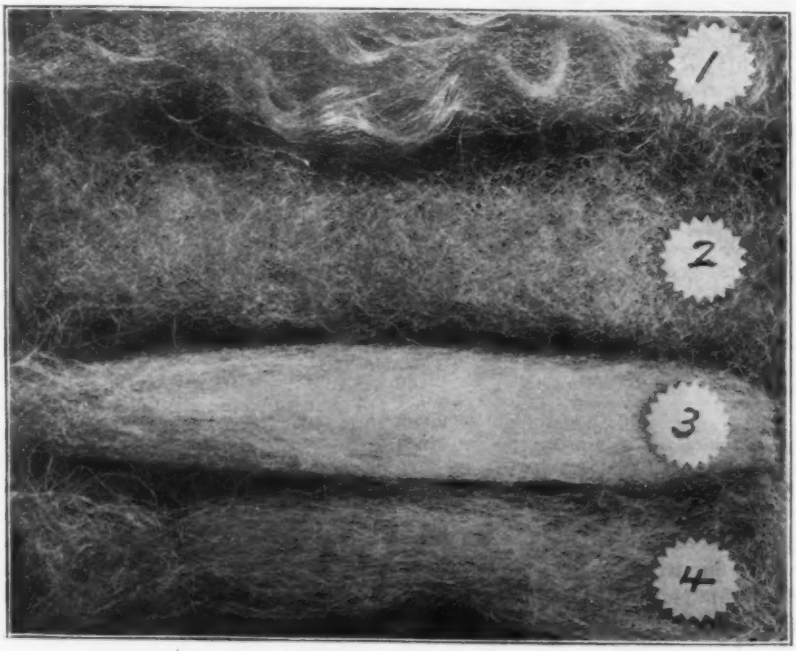
Sections 3 and 4 provide for attaching tags to the goods by manufacturers, clothiers and others. Section 5, dealing with imported goods, reads as follows:

That all mixed goods of every kind and description whatsoever, including cloths, clothing, and every article manufactured or in any of the processes or stages of manufacture imported from foreign countries, shall be marked, labeled, or tagged as provided for in case of manufactures of the same in the United States. The labels, tags, or tabs required by this Act shall be affixed by the owners or importers while it is in the custody of the custom-house officers, and it shall be the duty of such officers to inspect all such

goods, fabrics, or other articles, and see that they are properly labeled; and such goods shall not pass out of the custody of such officers until such labels or tags have been so affixed; and every officer of customs who permits any mixed goods as defined in this Act to pass out of his custody or control without compliance by the owner or importer thereof with the provisions of this Act, shall be guilty of a misdemeanor, and shall be fined not less than one thousand dollars and not more than five thousand dollars and imprisoned not less than six months nor more than one year.

If the provisions of this section are carried into effect, no fabric containing the slightest proportion of wool will come into the United States, for there is no method known to man of determining how much of the wool in a fabric has been and how much has not been subjected to a manufacturing process before it reached the mill where it was last converted into cloth. The custom house officials can distinguish cotton, linen, silk and certain other fibers from wool and woolen shoddy, but they will be forced either to refuse admittance to the goods or accept the statement of the importer as to how much wool shoddy there is in the cloth. What an alluring prospect for the manufacturers and importers of shoddy goods in the Batley district of England! What are the custom officers to do when Batley goods made of all or nearly all woolen shoddy are presented to them with the label "all wool"?

The next four sections provide penalties for neglect to attach the prescribed tags to the goods. These penalties consist of confiscating the property in addition to the imposition of fines ranging from fifty to four thousand dollars. Absurdity could go but one step farther and make it an offence to manufacture or wear clothing made from any material not sheared from a sheep. Among other things the bill provides



"S 'ODDY" ACCORDING TO THE GROSVENOR BILL.

That for all goods, fabrics, clothing, or other articles manufactured, or in process of manufacture therefrom, required by this Act to be labeled, which were manufactured prior to the passage of this Act, and which had passed out of the hands of the manufacturer thereof, and the ingredients or component parts of which are not known by the owner, merchant, or custodian thereof, a label, mark, or tag may be affixed, as provided in this Act, bearing the words, "manufactured prior to the pure fiber act, composition not known," which

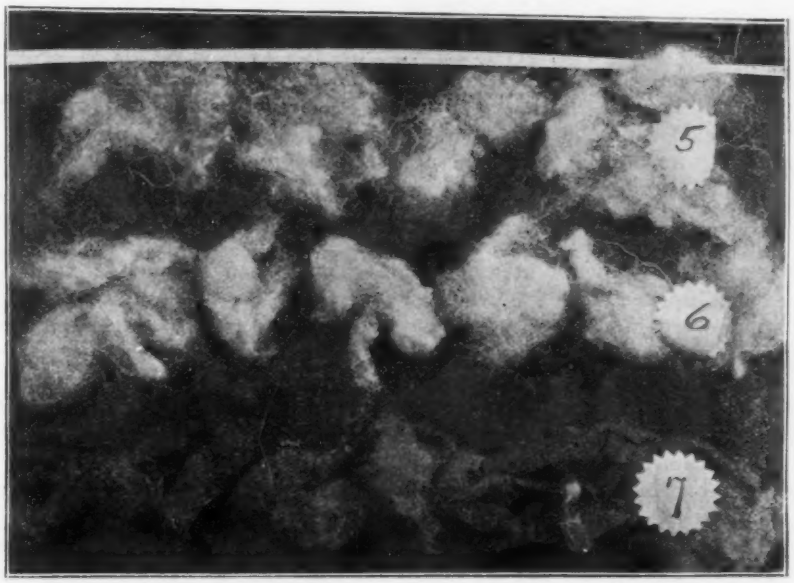
for such fabrics or article shall be a compliance with this Act.

The manufacture and distribution of woolen goods necessitates keeping large quantities of manufactured goods in stock at the mills and in the possession of the cloth jobbers, garment manufacturers, tailors and retailers of cloths and ready made garments. The value of this stock cannot be stated accurately; that it is enormous cannot be doubted, when we consider that the value of the annual production of so-called woolen and worsted goods is estimated at $423,000,000.

In view of the fact that the greater part of the material in process of manufacture in our mills would be subject to the provision last quoted, it is a fair estimate that a stock equal to two years' production, valued at say $850,000,000, is to be labeled, "Manufactured prior to the pure fiber act; composition not known."

This vast accumulation of property is to be cast under suspicion, regardless of merit. Its value is to be depreciated, no one knows how much, and this frightful loss is to be borne by manufacturers, clothiers, tailors, everyone owning wool in a partial or complete state of manufacture, in order to raise the price of wool in its manufactured or raw state. Such a law, if enforced, would spread ruin and bankruptcy throughout the woolen business, and if seriously regarded as imminent would instantly paralyze every branch of this great industry.

The oleomargarine law, after which the Grosvenor shoddy bill has been patterned,



"PURE WOOL" ACCORDING TO THE GROSVENOR BILL.

provides that the Secretary of the Treasury shall make necessary regulations for carrying the law into effect. A similar provision is embodied in the last section of this Grosvenor bill, and reads as follows:

> That it shall be the duty of the Secretary of the Treasury to make all necessary rules and regulations for carrying into effect the provisions of this Act.

With oleomargarine and butter, the Secretary found that in nearly all cases a simple microscopical examination would disclose whether the substance was butter or oleo, and, this simple test failing, that a chemical analysis would unerringly disclose the nature of the specimen. All that was necessary was to equip each inspector with a microscope

and a few photographs showing how oleo and unmelted butter appear under the glass.

There are, of course, chemical tests by which certain fibers may be distinguished from certain others. Animal fibers can readily be distinguished from cotton, linen and other vegetable fibers, and, if this were enough to cover the intent of the law, its execution would be accompanied by no more difficulty than the enforcement of the oleo law has given. The supporters of this Grosvenor bill, however, aim their attack at wool which has been through a previous and dimly defined process of manufacture. The Secretary of the Treasury must see that all cloths are labeled with the percentage of each material, including remanufactured wool or so-called "shoddy."

Now it is clearly absurd to expect either the microscope or chemical analysis to determine what part of the wool in a finished fabric has been "worked" once and what part twice; in other words, to determine the journey taken by the fibers before reaching the cloth in which the inspector may find them. This is no more possible than to determine how much of the gold in a gold coin, a watch case or a ring came direct from the mine, and how much had been used before in the coinage and jewelry of past ages.

For this reason the Secretary of the Treasury must adopt other regulations than those which have served for oleo. He can, to be sure, accept the statements of the manufacturers as to the composition of their goods. There are three difficulties in the way of this course.

The manufacturer cannot afford the great expense of maintaining the system necessary to make a fairly accurate estimate of the proportions of each material in his finished product, and, consequently, his statement would necessarily be inaccurate.

The wool grower would not be satisfied with this course.

Finally, it would tempt people without a scrupulous regard for the truth to engage in the manufacture of woolen goods. This would mean that the honest manufacturer of goods containing 90 per cent. of wool would tag them as "mixed" or shoddy goods, while the dishonest manufacturer of goods containing 90 per cent. of shoddy would tag them "all wool."

The other alternative is to establish government inspection of all woolen mills. The magnitude of such an undertaking may be faintly realized by considering the vast number of factories scattered throughout the country, the intricate character of the manufacture, and the necessity for a police surveillance of not only every mill, but every department in every mill in the United States. The absurdity of such a proposition needs no demonstration.

Now let us consider briefly the difficulties in the way of defining wool and woolen shoddy. As both are wool, the inferiority of one consists in its shorter and poorer staple. That being the case, the supporters of the Grosvenor bill, who are so anxious to protect the consumer of wool cloth, will appreciate the necessity of accurately defining the terms and protecting the consumer from short wool fibers, whether they come direct from the sheep's back or not. What is the short, seedy, six and eight months' wool to be called? And the "cotted" fleece which, hanging together like a piece of leather, must frequently be torn apart by a rag picker before it can be used? And the "shearlings" which the shepherd's shears could not reach and which are scraped from the sheep skins? These are all much inferior to many grades of waste and shoddy. Are they to be called "pure wool" or not?

The first operation in the manufacture of woolen goods is the sorting of the different grades of the wool. Which of these grades are to be dubbed pure wool and which shoddy? One of these sorts is known as "clippings" and consists of little tufts of matted wool, burs, tar, paint, dirt and dung. Is this to be called pure wool?

There is not a step in the various processes of manufacturing woolen goods that does not present equally perplexing problems, which must be answered if this Grosvenor bill becomes a law. Are the foul clippings from the fleece to pass as pure wool, while the long wool known as slubbing and ring waste to be branded as "shoddy"?

The question at once arises, What is "shoddy" and what "pure wool" as defined by this proposed law? While it is difficult to give a rational interpretation to such an irrational proposition as this bill, it is necessary to assume that it means something in order to point out its absurdities. One of its peculiarities is that the absurdities are in no wise lessened in number or degree by varying the interpretation of its provisions.

If we assume that the intent is to class woolen waste with shoddy, cotton and other adulterations, then all of the many waste products of the mill, varying from fine, long worsted waste to shear flocks (the latter being pulverized wool with no visible staple), must be classed together.

On the other hand, if woolen waste is not classed as "shoddy," then flocks or pulverized wool will march proudly side by side with the finest and best of wool from the sheep's back.

Adopting the former interpretation, we find that the Grosvenor bill will make the classification shown in the accompanying illustration. These samples have been taken from stock offered for sale in Boston on January 2, 1902.

No. 1 is mohair, long, lustrous, useful and beautiful, but it did not grow on a sheep, and is, therefore, "shoddy."

No. 2 is garnetted worsted yarn waste of long and strong staple classed by this bill as "mixed" or shoddy material, and from which much better fabrics can be made than can be manufactured from the stock shown at Nos. 5, 6 and 7, which under this bill would be classed as "pure wool fiber." Nos. 3 and 4 are samples of worsted combed stock, which has become waste by reason of the sliver or strand having been broken in the process of manufacturing. Stock such as these four samples, 1, 2, 3 and 4 will be "shoddy" under the Grosvenor bill.

No. 5 is a sample of "shearlings" wool; this is the wool left on the sheep's skin by the shearer and afterwards removed by the puller. It has been subjected to no process, other than washing, since coming from the sheep skin. It speaks for itself, being shorty, nibby and much inferior in staple, not only to 2, 3 and 4, but to a large part of the material known and sold as waste and shoddy.

No. 6 is a sample of four months' Texas wool, very little, if any, better than No. 5. The sheep did their best in the brief four months they had to grow this stock, but the wool grower, with a disregard of the consumer's interests in striking contrast with the solicitude professed by the promoters of this "pure fiber bill," seized the animals and cut the pure wool fiber that we see at No. 6.

No. 7 is a sample of wool clippings obtained in sorting wool. It is composed, as can be plainly seen, of pieces of short wool, matted with dung, seeds, burs, etc. Having come directly from a sheep's back without contaminating contact with woolen machinery, it must under this bill be classed as "pure fiber."

These samples have been selected to show the best stock classed as shoddy, and the poorest stock classed as pure wool by the Grosvenor bill. The other grades of "shoddy" vary by imperceptible gradations until flocks or pulverized wool is reached, while the other grades of wool will vary by an ascending scale until the best Australian wool stands at the head of the list.

We ask the supporters of this bill to look at these few facts about fibers to which we have briefly called their attention. It requires no expert knowledge, nothing but a little common sense to recognize the impossibility of distinguishing the innumerable grades of wool stock in the form of short wool, long "shoddy," long wool and short "shoddy" from each other when intricately mixed together by the various processes of manufacturing cloth.

Men may be found who can be bribed by the promise of a Government position to say that they can distinguish these materials, but, in the light of even the few facts about fibers to which we have called attention, we ask the supporters of this bill what their opinion would be of a man, who, to secure a position as Government inspector of fibers, says he can distinguish them with such a degree of certainty as to warrant imprisoning his fellow man and depriving him of his property.

The Secretary called upon to prescribe regulations for this Grosvenor bill might well exclaim with Dogberry in his instructions to the night watch:

"I think that they that touch pitch will be defiled; the most peaceable way for you, if you do take a thief, is to let him show himself what he is and steal out of your company."

We have hurriedly called attention to a few of the absurdities and impossibilities proposed by this law, whose sole object is to raise the cost of wool to the consumer. It is difficult to take such a monstrosity seriously. It is so taken, however, in influential quarters, both inside and outside of Congress. It deserves discussion only because of the influence of its friends. It needs only discussion in order to be quickly consigned to the oblivion which natural law has provided for such enterprises as railroads to the moon and Grosvenor "pure fiber" bills.

There is, moreover, another important phase of this question. The theory of a protective tariff that it reduces the cost of goods to the consumer has been strikingly demonstrated in many branches of American industry, notably in steel and tinplate manufacturing. It yet remains for this theory to be demonstrated in the manufacture of woolen goods. The success of that demonstration depends in great measure upon securing at a reasonable price an adequate supply of the raw material on this side of the tariff wall.

No tariff policy is secure which tends to keep the cost to the consumer of the finished product at an unnaturally high level. The production of wool and woolen cloth is an important branch of America's industry. But it is not the only interest in the country. There are other forces to be reckoned with. It behooves grower and manufacturer to see that the theory of low cost to the consumer under protection be demonstrated without unnecessary delay in the manufacture of woolen goods.

In the broad sense of the term, the woolen industry includes all operations from the growing of the wool to the making of the garment. All branches of this great industry, including both wool growing and wool manufacturing, stand or fall together. Each branch has an equal right to adequate protection. The great mass of woolen manufacturers are solidly for protection, both for the cloth that comes out of, and the wool that goes into their mills. The wool grower and the woolen manufacturer are not unlike the two opposing attorneys who, with all their differences, were united on the main point that each was making his living out of the same case.

Assuming that the impossible happens and that such a law is carried into effect, the result would be chaos in the woolen industry, and a rise in the price of wool and certain grades of woolen cloth, that would probably sound the death knell to a protective tariff on wool and woolens. We believe that a careful and broad consideration of this bill will lead its ill-advised supporters to withdraw their appeal for governmental assistance in raising the price of wool, and exclaim with Beatrice:

I have a good eye, uncle; I can see a church by daylight.

A WOOLEN YARN MILL.

From Uhlands Technische Rundschau.

(Translated from the German by the Editor of the Textil World Record.)

The accompanying plans show the exterior, longitudinal and cross sections, and floor plan of an American woolen yarn mill. The location of the various machines are also shown in the plan. The front view, Fig. 1, shows that the main object in designing the mill has been utility. The large windows admit light at both sides of the mill into the wide work room. The tower, which architecturally divides the mill into two equal parts, contains a stairway, elevator and the water tank for supplying the sprinklers throughout the mill. The two main buildings, shown in the ground plan, Fig. 6, are 54 ft., 6 in. high; 110 ft. by 64 ft., and 90 ft. by 40 ft. in area. The windows are 9 ft., 10 in. by 8 ft.

Fig. 9 shows the arrangement of the rooms on the ground floor. A, the preparatory room, is 54 ft. by 40 ft., and contains the bins for holding the different kinds of

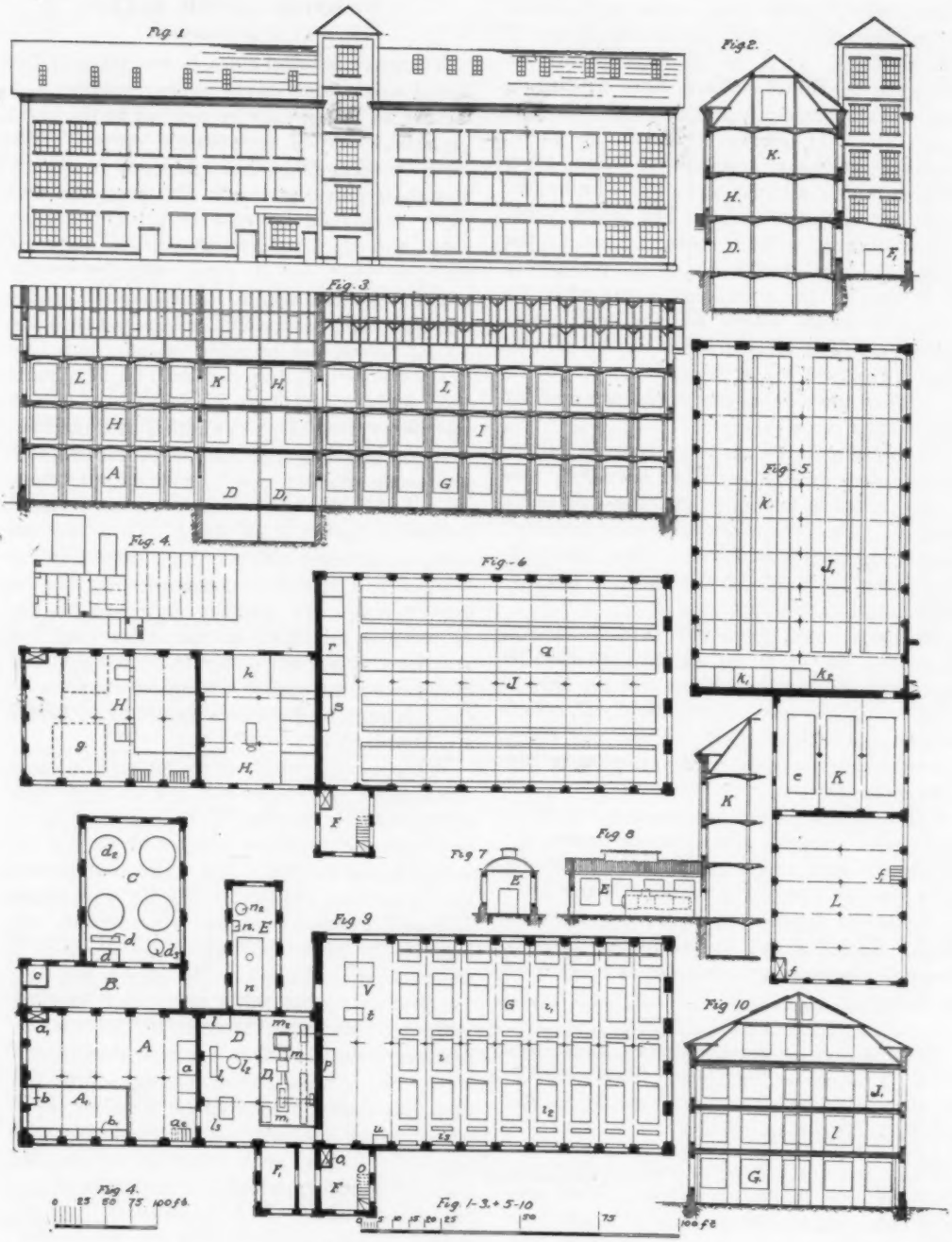


Fig. 1
Fig. 2.
Fig. 3
Fig. 4.
Fig. 5
Fig. 6
Fig 7
Fig 8
Fig 9
Fig 10
Fig 4.
Fig 1-3.+ 5-10

wool, which is sorted in the room, A^1, on the tables, b^1. B is the drug room, 50 ft. by 13 ft., in which is an office, c, for the dyer. A dye house, C, 45 ft. by 30 ft., contains the following machines: Wash box, d; rinsing box, d^1; extractor, d^3, and dye tubs, d^2. The repair shop, D, measuring 40 ft. by 36 ft., contains the work bench, 1; a lathe, 1^1; a drill, 1^2, and a circular saw, 1^3. The engine is located in the room, m. The dynamo, m^1, is also located in this room. Next to the room, D, is the boiler house, E, measuring 40 ft. by 10 ft., 8 in., and containing the boiler, n, steam pump, n^1, and feed water heater, n^2. The largest room on the ground floor is the card room, G, 44 ft., 10 in., by 64 ft. Along the side of this room are bins for the wool.

In addition to the carding machinery there are the card grinder, v, other accessory machines, a, work bench, p, and the overseer's desk, u. This room contains nine columns supporting the floor above. The tower, F, measuring 18 ft. by 14 ft., contains the elevator, o^1, and the stairway, o.

On the second floor, Fig. 6, is the room, H, measuring 54 ft. by 40 ft., contains the necessary picking machinery and the blower for blowing the wool to the room, H^1, which measures 40 ft. by 36 ft. From this room the material is carried from a pipe to the card room, G.

The spinning room, J, measures 110 ft. by 64 ft., and contains the spinning mules, Q; overseer's desk and work bench, s, and the yarn bins, r. On the third floor is the store room, L, for dyed wool, measuring 54 ft. by 40 ft. K is the dry room, 40 ft. by 36 ft. Room J^1, measuring 110 ft. by 64 ft., is used for spinning.

The exports of machine-made laces from Calais, France, to the United States for the six months of 1909 and 1910 were $3,001,824 and $2,294,099 respectively.

There are now in Germany about 7,000,000 sheep, against 25,000,000 in 1871. They produce about 24,250,600 pounds of wool, leaving a deficiency of 410,055,600 pounds, covered by imports estimated at $107,000,000.

EFFICIENCY BOOKKEEPING IN A WORSTED CLOTH MILL.

BY H. A. FROOM.

Efficiency in mechanics is the ratio of the useful work done to the energy supply; in a factory or mill it may be defined as the ratio of actual output to possible output. We learn in mechanics that efficiency is always less than unity, owing to the frictional and other resistance forces ever present, and in a mill the efficiency averages below unity, or 100 per cent., due in great measure to the human element which forms a part of the energy supply and which not only keeps the actual below the possible output, but also keeps the ratio between them at a very variable figure, especially if the work is not watched. This is true whether the machinery contained in the mill is of the highest and most efficient type in every department or not. Both these considerations demand careful attention at all times. To follow the work performed with any high degree of intelligence it is essential that proper tabs be kept through the medium of a suitable set of records tabulated at the office end. A standard of efficiency should be sought, and maintained excepting for good reasons to the contrary, and the aim should be to better the standard.

A piece cost system does not satisfactorily accomplish the desired end in a worsted cloth mill, primarily because of the excessive labor and expense involved compared to the results obtained. As a less cumbersome and costly method the writer has for some time followed the shop unit plan whereby tabs are kept on the work—past and present—of each department in the mill. The idea is not new as, perhaps, most mills are today keeping more or less exact records of the various process costs, but they are not always uniform, or comprehensive enough, nor are they invariably presented on time to those whose place and duty it is to closely and regularly follow such records. For this reason the writer adopted the system of using but one additional book called a "process book," outside of the regular set, which contains no figures whatsoever covering either

FWCo REPORT FOR Week End 12/10 1919 / Month of ... 19 / Season ... 19

	COSTS PER YARD Present Cts	Mils	Standard Cts	Mils	Average Cts	Mils
DRESSING						
WOUND lbs 1465	1	9	1	2	1	8
SPOOLED lbs 1443	2	1	1	3	2	6
DRESSED and TWISTED lbs 2418						
" Warps 25 Cuts 101 Yards 6064 Avge Ends 3732	2	-	1	3	2	5
" Samples Nos of 4 " 1/4 W 32						
" Blankets " " " " -						
WASTE MADE lbs 61 = 1 % of Dressed						
TOTAL DRESSING COST per Yd	6	-	3	8	6	9
WEAVING						
FILLING WOUND lbs 1869	-	9	-	8	-	9
WASTE MADE lbs 7 = 1/2 % of Wound LOOMS WASTE lbs 85						
WEAVE ROOM EXP. 38 % of Weaving. Standard = 32 %	3	3	2	9	3	8
WEAVING 9 ¢ DRAWING IN 1 1/2 ¢	10	2	10	2	10	2
WOVEN CUTS 94 Yards 4790 Avg Picks 50						
" Samples and Blankets 12 Yards 1/2 W 91						
LOOMS RUN on CLOTH 47½ LOOM-HOURS 2658 = 95 % of Full						
" " " SAMPLES 1½ 81 = 3 %						
" WAITING 1 61 = 2 %						
" IDLE - - = - %						
" run at 100 Picks per Minute = 15946 000 Picks						
TOTAL Nos OF PICKS WOVEN 8622000 = 55½ % Standd = 78 %						
TOTAL WEAVING COST per Yd	14	4	13	9	14	9
FINISHING						
BURLED CUTS 93 YARDS 4758	1	4	1	2	1	5
Etc. " " " "	7	2	6	3	7	8
PRESSED " 93 " 4703		5	-	4	-	7
INSPECTED 94 " 4681.						
TOTAL FINISHING COST per Yd	9	1	7	9	10	-
POWER						
FUEL CONSUMED 22 TONS - CWT	1	1	1	-	1	2
SUMMARY						
DRESSED Cuts 101 Yards 6064 S'ps & Blkts Yds 32	6		3	8	6	9
WOVEN " 94 " 4790 " " 12	14	4	13	9	14	9
FINISHED " 94 " 4681 " " 26	9	1	7	9	10	-
PUT INTO STOCK " 10 " 500						
SHIPPED " 75 " 3745		3		2		3
Nos Pcs REFINISHED 1 Nos Pcs SECONDS						
REMNANTS 4 4 Yds STRINGS ALLOWED 8 Yds = ⅓ % of Fin.						
TOTAL WASTE MADE lbs 153 = 3½ % of Dress and Fill						
POWER.	1	1			1	2
TOTAL.	30	9	26	8	33	3

payrolls or costs per yard, but merely a daily output with machinery run and fuel records from which, with the aid of the regular weekly payroll book—or ledger at the end of the month—the cost per yard and percentage figures are drawn off and shown on a separate loose leaf which is filed in a binder after the required number of copies are taken and delivered to those whose business it is to receive them.

For the purpose of illustrating the use of the system in a 50-loom worsted cloth mill doing its own dressing, weaving and finishing only, the accompanying condensed form of "process book" has been drawn off. Needless to say the figures contained thereon are not copies of existing conditions as this is not necessary for the purpose of illustration and, as above stated, the columns are condensed in size and number for present convenience.

As will be seen, by reference to the plate, each individual line is intended to cover a day's work from "dressing" to "shipped." In the dressing room it will be advantageous to split up the "twisting" and "dressing" into two columns in place of one as shown. In the weave room it is necessary to add columns for blankets and ends together with the yards woven. The finishing room should be subdivided at least into the following: grease sewing; fulling; scouring and drying; fine sewing; specking; brushing, shearing and sanding; finishing and pressed. The finishing room being the most important department, inasmuch as profits are largely made or lost there, it is necessary to divide the process records extensively and keep as many columns as it is possible to induce the management to obtain yardage returns from the room for.

To commence with the dressing room, the boss dresser must provide a daily report giving the information found in the dressing room columns of the "process book," excepting the "average ends" in place of which information he gives the style numbers dressed. The average ends are figured therefrom in the office. A small printed report, 5 in. by 3 in., containing about fifteen lines, is large enough for his purpose.

The boss weaver covers his room on a somewhat larger size daily report sheet whereon are given the pieces woven (filled in by the weave room percher) and showing the piece number, style, yards and per yard weight in ounces. Next come the samples and blankets, if any, and below a statement of "looms running on piece goods"; the number "running on samples"; number of "waiting" and "idle looms." The "loom hours" are computed in the office. In the example shown the working hours are from 6.30 a. m. to 5.36 p. m. for a full day and 6.30 a. m. to noon on Saturdays, which make 10 1/10 hours and 5 1/2 hours per day respectively for a 56-hour week. Multiplying 10 1/10 hours by the number of looms running, waiting or idle per day gives the loom hours, and these are needed to correctly show the percentage of full capacity run. The looms form the key-stone of the mill machinery arch and their percentage run figures are usually very accurate indicators of the probable amount of profit or loss to be expected. In slack times lasting over a succession of weeks, for instance, they will show that below a certain percentage run figure, a loss is practically inevitable, and the loss figures will follow a declining percentage in inverse ratio. This percentage affects the general efficiency of the room in like manner, as the costs per yard will go up with a declining loom percentage run.

The boss finisher's report is the most extensive one of the three. It may occupy nearly one-half hour of the boss finisher's time every morning. Even so it is worth it and much more. The writer's custom is to call for the piece numbers and styles only for the "burled," the same for the "grease sewn," "scoured," etc., pieces to the "pressed" which is the only process requiring the addition of "yards" treated information from the boss finisher, all the others having their yardage filled in by the office. The finisher's report sheet may have to be at least 8 in. by 11 in. and ruled with as many blank spaces as there are finishing room labor accounts in the ledger, and with a few blank lines at the bottom of the sheet

FORM WORSTED COMPANY

PROCESS BOOK

DAILY OUTPUT, MACHINERY RUN, WASTE MADE and FUEL USED

Month of December 191

DATE		Weather	Spoiled	Dye Tubs	DRESSED					Warps	Looms	Weaves	Yards	Drawn In		Warps	Looms	Weaves	Yards	Looms	Yards	Looms	Yards	Looms	Yards	Looms	Yards	Looms	Yards	PASSED		INSPECTED		TO STOCK		UNLOOMED		Rem.	WASTE					Total Used	
			Yds	Yds	Warps	Cuts	Repairs	Yds	Avg Cuts	%		%				%		%																							
Week	1																																								
	2																																								
	3																																								
TOTAL																																								
Week	4																																								
"	5																																								
"	6																																								
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Week	29																																								
"	30																																								
"	31																																								
"	32																																								
"	33																																								
"	34																																								
TOTAL																																								

SUMMARY BY WEEKS SHOWING TOTAL FOR MONTH

1st Week Ended																																										
2nd " "																																									
3rd " "																																									
4th " "																																									
5th " "																																									
TOTAL																																									

Remarks

2/9 Van Alstyne Felting working in wool. Bal's over 62

17/9 New Lappell called on Press "Waste Book Fire Room counted to 5 P.M. Yards on 21/9 Seven Looms to be fulled

27/9 Book closed 12 noon for January delays; 1 for February and 2 seconds

for his machinery report if any is given, as it should be.

The examiner's daily slip is a smaller one in size and states the piece number, style, yards, weight per yard in ounces, strings allowed and remnants cut. No piece is included thereon until actually ready to place in stock or ship. If a piece is rejected by the examiner and returned for refulling or other necessary refinishing it must be so reported on a separate "return" slip. These return slips become of value as guides in future seasons, showing styles to steer away from, unless it happens that they merely indicate some easily remedied fault in design or manufacture, which fault will be more likely to be remedied if the fact is thus promptly reported and circulated.

The shipped pieces are also reported whenever a shipment is made, whereas the waste made is, as a rule, collected once a week and although only three columns for waste are shown in the illustration there should be further subdivisions for "winding," "spooling," etc., as the aim is to keep the percentage of waste down and if excessive to locate the cause.

The account of fuel consumed is a very convenient record for following the coal and firing efficiencies. Sunday consumption for heating purposes is included in Monday's figures. The above outline should suffice to indicate the kind of information required as also the method of gathering it. Once this is properly entered in the "process book" the latter begins to serve at least a four-fold purpose: First it is a rough aid in arriving at an estimated value of stock on hand at any time, i. e., as far as yarns, process goods, finished goods, waste and fuel are concerned. Secondly, it is an accurate means of furnishing efficiency percentage figures besides a power in maintaining them at a high standard. Thirdly, it gives much necessary information for figuring in advance the cost, and hence arriving at the selling price, on new goods to be made. Lastly there always remains the statistical value, inasmuch as each line in the process book gives the mill history of every working day in the year.

Next comes the method of fully utilizing all the information obtained and, as remarked before, every pay day and trial balance day should see a weekly or monthly report submitted. A loose leaf sheet, about 8 in. by 11 1/2 in., printed like the illustration shown, is the best medium. The illustration is necessarily abbreviated and the figures given are not exact, but merely meant to indicate the purpose of the form. The latter, in practice, is intended to be a condensed resultant of the process book and pay-roll accounts, to which are added the necessary machinery percentages.

The form covers a report for the week ending December 10th, and it is assumed that the system has been followed for some time previous to December and that better results have been obtained in the past as evidenced by the "standard" column figures. These standard figures represent the best performance attained hitherto and the object of the report is to show how close the last efforts have been to the best recorded so far, whether better or worse. The best or lowest costs per yard invariably become the standard for either week, month or season. One standard figure covers the ground for all three and is always written in red ink. The first column shows the last cost figured to the date, and embracing the period—in the present case the single week ending December 10th—of the report itself.

The pay roll is subdivided in accordance with the ledger labor accounts, including "weaving expense," which account covers the fixers, harness raisers, chain builders, etc., and is offset in the process book by the "woven yards" column. The latter will give the cost per yard, but it is usual also to show the percentage which the weaving expense amount constitutes of the sum paid for weaving alone. It figures as a rule anywhere from 30 to 50 per cent. or more according to the number of looms running. Assuming the pay roll items to be properly subdivided, the overseers' pay in each department must be apportioned to the various subdivisions except weaving, which is usually left to stand alone when the weavers are paid on the piece work basis. This is the plan assumed in the illustration, hence the

last average price per yard paid for weaving alone, i. e., for the week ending Dec. 10th, is carried through all three columns so that the comparative value of the total weave room costs are not materially affected because of a varying pick work woven in the past.

"Drawing in" is here supposed to be paid on the same basis and the two are shown added together, although they are not so added in practice. It is worth noting that the per yard cost of weaving, found by dividing the weavers' pay by the yards woven, is a good check upon the average picks obtained, inasmuch as the latter are figured from the styles and pieces woven.

The pay-roll book then gives the correct amounts paid for winding, spooling, dressing, etc., and these are divided by the yardage in accordance with the figures contained in the respective columns of the process book, from winding to finished, the cost per yard thus obtained being placed in the first column of the report. The remaining two columns are filled in during spare time before pay day, or before the end of the month, if the report is for the month. The "summary" should not be omitted, as it is usually looked into first by the recipients of the report because the net results are there seen at a glance and quickly sized up.

To some the system may appear formidable, but it is surprising how little time is required for one office man to keep such records, provided they are kept strictly up to date, not even a day being allowed to lapse on them. He need spend no more than an average of an hour a day at the utmost except on pay days and at trial balance time, when it may take an extra hour to prepare the reports. The overseers spend much less than an hour a day, so that compared with the knowledge and insight gained the tax on time is small.

The "loom hours" columns, in addition to giving a more exact percentage of capacity run figures, are helpful in determining the efficiency of the weavers and the work in the weave room as a whole. It will be seen that the weekly report not only gives the total picks woven, but also the percentage of possible picks that would have been accomplished had the looms run continuously without a stop during the working hours of the week. The first figure, or "picks woven," is arrived at by multiplying the woven yards by 36 inches and this result by 50 average picks, which equals 8,622,000 picks actually woven. Assuming for the purpose of illustration that the looms are run at 100 picks per minute, we have loom-hours run = 2,657 7/10 multiplied by 60 minutes = 159,462 loom minutes, multiplied by 100 picks = 15,946,200 picks, if the looms used on piece goods had run continuously. These figures show that the looms actually run 8,622,000 divided by 15,946,200 = 55 1/2 per cent. of the time, but allowance must be made for warp and filling changes, fixing, etc., which brings the best possible expectations down to 75 per cent. of the time consumed, if the latter is extended over a reasonably long period, such as is covered by a weekly or monthly report. The percentage allowed depends greatly on the average size of the warps dressed and the poor showing made above, 19 1/2 per cent., is due principally to one or more of the following causes: small warps; difficult weaves; poor yarn; poor weavers; poor or slow fixing or improper looms for the class of goods made. Had the average cuts per warp been eight instead of four as shown, the efficiency percentage would probably figure at least 5 per cent. higher.

Where a week is split in the process book, as will be seen by referring to the plate, the last three days of the November totals are, of course, added to the 3d December totals for the purpose of the weekly report. "Waste," on November 30th, is estimated and the difference between estimated and actual weight is written in for the week ended December 3d.

Should "burling" or any other finishing room process be paid on the piece work basis the cost per yard naturally becomes of less importance than the comparative output in a given time. In order to give efficiency figures the yardage per burler, including the standard yardage, is obtained by dividing the total burled yards by the num-

ber of burlers working. This result is shown as well as the price per yard, which latter should not vary beyond the small variation caused by apportioning the boss finisher's pay to that department. The price is needed for the total finishing cost.

In conclusion it is very important to seek the cause of every betterment of the standard figures. If an improvement is mainly due to a higher percentage of total capacity run, the fact must be noted; the same if due to a special stress or rush caused by a demand for early deliveries or otherwise. Again it may be that raw materials have been distributed with better forethought. In short, every time the standard is shifted to a better figure the cause should be sought and assigned. The standard is the prime factor of the whole system, for the mere statement of labor costs per yard for a period just passed is not nearly so interesting or instructive as the comparative effects obtained by pursuing the above method.

SEASONABLE FABRICS.

A more hopeful feeling prevails among mill men and selling agents as compared with the situation a few months ago. An encouraging feature is that comparatively few piece-goods, especially in overcoatings, have been carried over from the spring and fall of 1910. Trade is fairly active in the lower and medium qualities of ulsterings and overcoatings for both men's and women's wear. Selling agents report a spirited demand for the better grade fancy overcoatings.

It is evident that the cancellations resulting largely from the Chicago clothing strike would have curtailed considerably the demand for spring-1911 woolens and worsteds, were it not for the fact that this business was diverted into other clothing manufacturing centers, like New York, Boston, Rochester, Cincinnati and Buffalo.

The new fall and winter pattern designs for men's ulsterings, motor coatings and other overcoatings are exceptionally attractive and desirable, notably so in the various rough unfinished-faced fabrics which come in 22 to 30 ounce weights, and in widths running from 54 to 56 inches.

The body colors are mainly in light and dark browns, olive, green, wood color, elec-

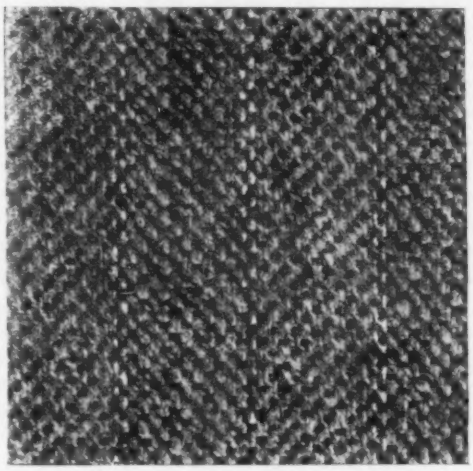

FIG. 1.

tric blue, slate and gray, with combinations of red, yellow, blue and other bright interwoven threads running through; also in

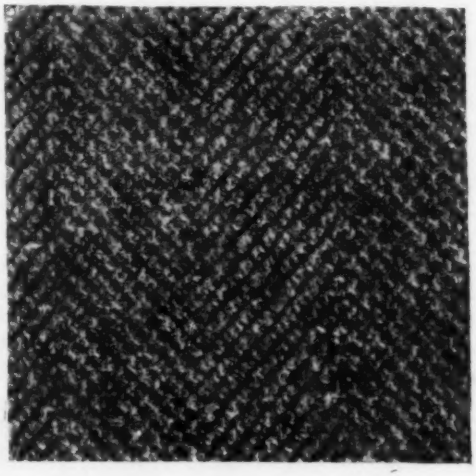

FIG. 2

favor are subdued stripes, large checks and invisible squares.

In homespun overcoatings and suitings the color combinations are quite effective, with more go than is evidenced in either the English or Scotch bannockburns.

In the plainer and dressy overcoatings, such as kerseys, meltons and unfinished worsteds, the colors are plain black, oxford mixture, dark and light brown, olive and light and darker grays.

Montagnacs, vicunas and chinchilla ulsterings and overcoatings for men's and women's wear come mainly in black and oxford, dark blue, and light and darker grays; recently these goods have not been used as largely by either men's clothing manufacturers or women's cloak makers, as was the case in former seasons, the rougher, softer finished fancy woolen coatings being more highly regarded.

The demand for black cloth is steadily growing, owing principally to the fact that fur overcoat manufacturers indicate preference for this cloth, which comes in weights varying from 16 to 18 ounces, while in width they average only from 50 to 52 inches. Some of the latest styles of English suiting are shown at Figs. 1, 2 and 3.

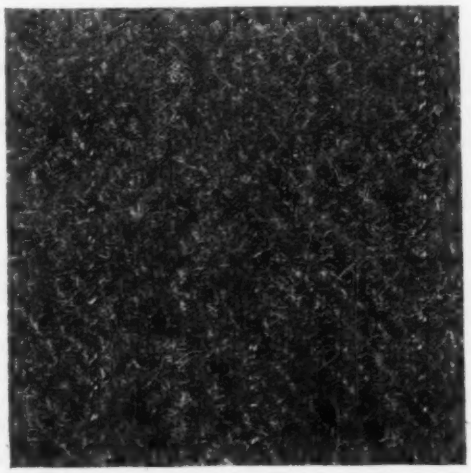

FIG. 3.

In men's suitings for 1911 spring and fall wear the pattern designs are considered very choice. In cheviots, tweeds, homespuns and worsteds, the softer woolen suiting fabrics are shown in many tones; small checks and delicate stripes are well rated, and brown, olive, olive-green, slate and gray mixtures are the popular suit shades.

In serges and unfinished worsted suitings, blue and black colors will have the usual season's call; neither the finer nor lower qualities of fancy worsted suitings are receiving the attention accorded the softer goods.

Most leading houses do not expect to book any substantial orders on the higher priced woolen and worsted fabrics until about the 10th to 15th of January.

The recent cold snap brought quite a demand for fancy woolen ulsterings for immediate use, but mill agents accepted such orders subject to the proviso that from ten days to two weeks be allowed for manufacture.

Money being plentiful, especially with Western farmers, retail clothiers and dry goods houses throughout the country doing big and profitable business, the outlook is unquestionably bright.

The Pacific Coast, likewise, is reported to be very prosperous, fruit crops having been large and great shipments made to Europe and sold at stiff prices.

The favorable weather has benefited the retail clothing trade materially, tending to reduce winter stock.

The increase in the imports of cotton and cotton manufactures from the United States to the Philippines for the three months ending March, 1910, amounted to $439,842.

The greatest amount of raw silk ever shipped from Canton to Europe was in 1907, when 36,243 bales were shipped, and to America, in 1908, when 14,766 bales were shipped.

The imports of wool into Great Britain for the seven months ending July, 1910, amounted to 586,197,185 pounds, valued at $121,112,522, as compared with 579,427,221 pounds, valued at $109,950,119 in 1909 and 494,141,156 pounds in 1908.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

FRENCH WORSTED SPINNING.

BY ROBERT DANTZER.

(Translated from the French by the Editor of the Textile World Record.)

(Continued from November.)

Carding. After scouring, drying and oiling the wool is ready for carding, which separates the fibers and arranges them in a parallel position, removes the very short fibers and the foreign matter, and then delivers the carded wool in the form of a continuous sliver. There are two kinds of cards: 1. Single cards. 2. Double cards. The single card is used but little, although capable of doing good work. In the custom carding mills the double card equipped with a breast is preferred as it is capable of turning off a large amount of good work. A double card cleanses the stock better, but breaks more of the fibers, causing a larger percentage of noil, while the top and yarn produced has but a slightly increased value. In connection with the double cards a burring attachment is used for the purpose of removing the burrs and vegetable matter, which are found principally in South American wool.

Fig. 1 shows a longitudinal section of a double card with breast and burring attachment, such as is used generally in the combing mills of Roubaix and Reims. The wool is spread evenly on the apron, 1, by a self feed not shown in the illustration. After leaving the apron the wool passes between a pair of feed rolls, 2, covered with leather filleting from 1 inch to 1 1/4 inches wide. The wire is sufficiently strong to resist the pressure of the wool and long enough to hold it firmly. These feed rolls are 2 inches or more in diameter. If too large the distance between the point of contact and the next roller becomes too great, causing bad carding, the object of the feed rolls being to hold the wool and have it drawn uniformly into the card instead of being delivered in bunches. The feed rolls should be in slight contact with each other in order to prevent any slipping of the wool between them. In some cases two pairs of feed rolls are used, the speed being graduated to that of the licker-in, 4, in order to prepare for drawing the fibers parallel to each other. Occasionally the feed rolls consist of hollow copper tubes, perforated to receive steel pins which are stronger than the teeth in the card clothing. This arrangement is suited only for working long wools.

The second pair of feed rollers are run at higher speed than the first pair. A brush, 3, revolves above the upper feed roll to keep the latter clean. As shown in the illustration the feed roll delivers the wool to the licker-in, 4, which is clothed with saw-toothed steel strips, which open up the wool and prepare it for the subsequent process of carding. In order to open up thoroughly the large bunches, the licker-in is heated by steam introduced into the interior. Above the licker-in is placed the burr guard, 5, which is adjusted to throw back into the pan, 6, any hard burrs or foreign substance that may be in the wool. This burr guard has 18 plates fastened to a shaft. The wool penetrates the teeth of the licker-in and the burrs and impurities remaining on the outside are struck and knocked into the pan by the burr guard. The intermediate roll or tumbler, 7, carries the stock to the small cylinder, 8, which is surmounted by 2 workers, 9, and 2 strippers, 10. The cylinder, 8, first delivers the wool to the stripper which in turn passes it to the worker. The first worker delivers the wool to the cylinder which again passes it to the second stripper; then it is delivered to the worker and passes back to the cylinder. The circular brush, 11, carries the stock to the cylinder, 12. This cylinder is surmounted by a guard, 13, which constitutes the Morel burring attachment. A tumbler, 14, carries the stock to the main cylinder, 15, which is surmounted by 4 workers, 16, and 4 strippers, 17. Here the stock is carded in the usual manner, as already explained, and finally raised by the fancy, 18, and delivered

to the doffer, 19. The direction of the various cylinders, workers, strippers and rolls is indicated in each case by an arrow.

The wool is stripped from the doffer by a comb, 20, and passed in a sheet to the Hasmel burring attachment which consists of a smooth roller, 21, surmounted by 2 corrugated rollers, 22, which are driven by contact with the roller, 21. The roller, 23, passes the sheet of wool to the main cylinder, 24, which is surmounted by four workers, 25, and four strippers, 26. Here the process is the same as in the case of the first card. By means of the fancy, 27, doffer, 28, and comb, 29, the stock is taken from the cylinder and delivered to the funnel, 30, where it is condensed into the form of a sliver, which then passes between the rollers, 31, the bottom of which is corrugated, driving the top one by friction. The sliver then passes to another funnel, 32, and is wound in the spiral form on the spool, 34, by means of 2 rollers, 33. The more rapid the vibration the less liable is the sliver to become matted. The breast is closed in a special manner with cross wire, 16 to 22, varying with the wool that is being treated. The coarse setting of the teeth permits the wool to open up gradually without breaking the staple. The various parts of the breast should be run at a rather slow speed in order to give time for the fibers to become straightened out and brought parallel with one another without breakage. The wire in the clothing of the feed rolls is inclined toward the front of the card, while that in the other clothing is inclined toward the back. In many cards the fancies are covered to prevent waste by reason of the stock flying into the air. For the same purpose a grid is placed under the card in order to let only the vegetable matter pass through. The wool should be thoroughly scoured and dried sufficiently and delivered to the self feeds in a loose condition.

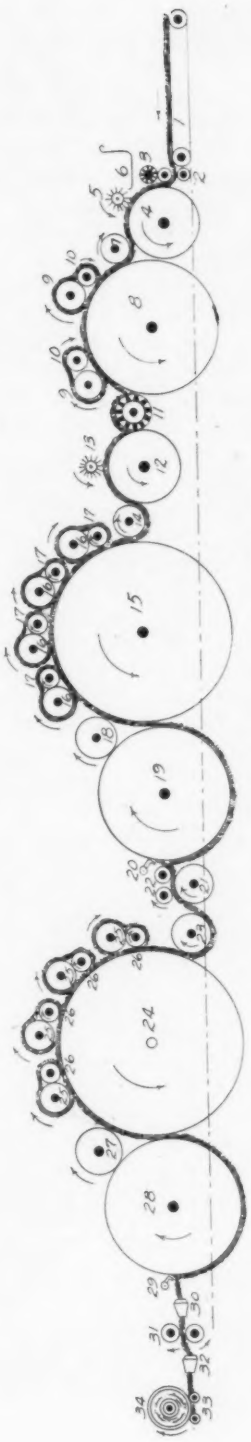

FIG. 1. A LONGITUDINAL SECTION OF A DOUBLE CARD.

CARD CLOTHING.

The card cylinders and rolls are covered with clothing consisting of leather or cloth in which is set steel or iron wire. This clothing is applied to the card rollers either in the form of sheets or filleting. The clothing

should be adjusted to suit the stock to be carded. The longer and coarser the fiber the larger and stronger should be the wire in the card clothing. The finer the wool the finer and more closely set should be the wire points in the card clothing. Two factors are to be considered in the construction of card clothing: 1. The foundation. 2. The wire.

Foundation. In order to make possible a close adjustment of the card it is necessary that the clothing should be applied under the highest possible tension. For this reason the foundation of the card clothing should be very strong, but if it is too hard and stiff it will lack elasticity and cause the wire to break. Originally leather only was used for the foundation of card clothing. In 1834 an Englishman named Walton used cloth in place of leather on cotton cards. This consisted of several thicknesses of cloth glued together and covered with a coating of rubber. At present leather is but little employed for wool cards except for the small rollers. In order to fulfil the requirements of elasticity and resistance, the foundation of card clothing is now made of layers of cloth glued together, of which some are soft and elastic, while others are more solid in order to afford greater durability. The cloth is fastened together by a solution of rubber or by cement. The last named is a mixture of Cologne glue and linseed oil in variable proportions. While the rubber imparts a certain flexibility to the clothing, the cement makes it harder. As the rubber is more easily affected by heat and oil it is a good plan to keep the card room at a uniform temperature. It is also advisable to coat the iron cylinders on which the clothing is wound with a solution of rubber, partially dried. In order to counteract the effect of moisture the upper part of the clothing foundation is covered with a thin coating of natural rubber. The vulcanized rubber that was formerly employed has the disadvantages of causing the wire to rust. The foundation for the clothing consists of four superimposed fabrics, three of them are cotton while one in the interior is either wool or linen.

Metallic Wire. Iron wire was long ago supplanted by steel. Ashworth Bros. in 1878 first conceived the idea of using steel, but it was only in 1890 that Bateman, by a new process, succeeded in tempering the wire so that it remained white and polished. Round wire is chiefly used because it is more easily set in the foundation. Other forms of wire, such as flat, triangular, etc., rapidly enlarge the holes in the clothing and make the card clothing less rigid and serviceable. In order to present a fine point the wire must be made thinner from the knee to the point. This is done in two ways, either before or after setting. In the first case any one of three methods may be adopted:

(a) The wire when drawn is made alternately round and either flat or triangular. This is a very different process and requires machines adjusted with mathematical precision, consequently good results are difficult to obtain.

(b) The upper part of the round wire is flattened by means of a press on the setting machine. The points are afterwards tempered by the Bovensiepen process.

(c) This is the Deiss process by which the point of the round wire is sharpened on the setting machine and then the wire set in the foundation.

The second method of reducing the size of the wire is adopted when the clothing is fine, and consists in a lateral grinding from the knee to the joint. This is done by running the card rolls in contact with emery rolls, which are vibrated in order to produce a uniform surface and prevent any inequalities in the emery from being reproduced in the clothing. By means of this lateral grinding the teeth are enabled to hold on to the fibers during the process of carding.

Clothing Cards. Before preceding to put clothing onto cards it is necessary to make sure that all the parts are perfectly true and to correct any inequalities by either turning or grinding. This process involves no difficulty in the case of iron or wood cylinders. When the cylinders are covered with papier-mache or stucco it is necessary to soften the surface by moistening in order that the tools may not be injured. Any parts of the surface that may become detached must be replaced by a composition consisting of a mix-

ture of rosin, yellow wax, white powdered chalk and tallow. This mixture is used hot and is easily applied to the broken parts of the cylinder. The surface of metal cylinders is covered with black lead which facilitates the application of the clothing. Sometimes the workman contents himself with rubbing the cylinder with a cloth saturated with vaseline. This method is usually adopted when working damp wool.

The main cylinders are clothed with sheets, the application of which requires much care. The circumference of the cylinder is measured and then divided into equal parts corresponding to the number of sheets to be applied. The filleting is made in lengths of 100 to 120 yards, which prevents the necessity of splicing. In applying the clothing the teeth should be inclined toward the workman. In the case of fabrics coated with rubber it is well in winter to expose the filleting to a fairly high temperature in order to soften the fabric and prevent its stretching after being applied to the card roll. The filleting should be tapered to a point in order to cover the cylinder completely. Then it is tightly stretched on a roll preparatory to being wound on the card roll. After the roll is clothed it is ground with an emery roller. For steel wire Dronsfield emery No. 40 is used. It is advisable to alternate the solid emery roller with the traverse grinder. In this way a cylinder covered with unground clothing can be sharpened in two hours. Clothing that has been ground previous to being applied to the cylinder requires only two or three passages of the grinder.

All parts of the card should be adjusted with great accuracy and all surfaces should be exactly parallel. The main cylinder resting in bearings in a frame of the card serves as a basis for the adjustment of all other parts. The adjustment is easily made with steel gauges about 12 inches long and of uniform thickness. The feed rolls are adjusted at 1/10 inch from the cylinder. The workers on the breast are set the same distance from the cylinder, and the strippers at the same distance from the main cylinder and the workers. The breast doffer is set 1/16 inch from the cylinder. Round wire can be set slightly closer than is advisable with triangular wire. Around the main cylinder the parts are set as follows: The doffer 1/32 to 1/16 inch, according to the wool being carded. The first worker, 1/16 inch, the second worker, 1/20 inch, the other workers, 1/32 inch. The first strippers are set 1/12 inch from the doffer of the breast and 1/16 inch from the main cylinder. The other strippers are set 1/16 inch from the workers and main cylinder.

When starting a new card the parts are set about 1/50 inch farther apart. The fancy is regulated so as to have the points of the teeth come in contact with the main cylinder. The comb which serves to strip the wool from the doffer should be set close so as to leave as little wool in the doffer as possible. Care must be taken not to have the comb touch the doffer, otherwise the clothing will be damaged. The card should be adjusted carefully after every grinding. After being adjusted the card is run empty for awhile to make sure that none of the parts come in contact, otherwise it may be necessary to regrind the card. The resistance offered by the slow movement of the workers and strippers results in bringing the fibers parallel with each other. In order to prevent breakage of the staple it is better to use large workers and strippers. In this way the fiber hangs on to the clothing at a point a considerable distance from the point of contact of the clothing. The workers should be run at varying speeds. The first worker, receiving the partially carded wool, should turn more rapidly than the last worker, which complete the carding process. Large doffers are better than small ones because they remove a larger quantity of the wool raised from the cylinder by the fancy; also because on a large roller the wire is opened less and consequently is better able to retain the wool.

Card Waste. A part of the wool entering the machine is not delivered by the doffer. It consists of short fibers, dirt and other foreign matter which becomes imbedded in the clothing. This accumulation at a certain point prevents the card from

doing its work properly and it then becomes necessary to clean the machine. This is done by means of hand cards covered with clothing, set somewhat closer than the clothing on the card that is being cleaned. It is a good plan before cleaning the main cylinder to pass an emery surface over it while in motion in order to raise the waste to the points of the clothing. The same process is adopted for cleaning the doffer. When the clothing of the hand card becomes engaged with the clothing to be cleaned, the hand card should be drawn straight down, care being taken not to move it either to the right or left. After cleaning by hand the cylinder is run for a short time in order to remove all loose matter and dust. The clothing is then smoothed up with emery. The same process is adopted for the workers and strippers. The clothing should be sharpened by hand after each cleaning, and in addition the cylinder should be ground at least once a month by machine, as the hand grinding is not sufficient. It is frequently necessary to raise parts of the wire by hand in order to bring the depressed parts to the proper level. In such a case it is necessary to grind the cylinder, watching the parts that have been raised very carefully in order that the wire may not be damaged by too severe contact with the grinder.

Defects in Carding. The most important defect in carding is the formation of specks, which occur most frequently when carding dry wool, or when the temperature of the room falls too low. The specks in the wool are more liable to occur when there is a disproportion between the fineness of the wool and the number of the card wire. For this reason custom combers usually have their cards clothed with wire of different sizes so that they will be able to handle any kind of work required. Specks are also caused by not keeping the card in good order, by poor grinding and improper adjustment. The temperature of the card room should be as uniform as possible and not exceed 76° F. Vibration of the machine should be avoided and care should be taken to prevent rusting of the clothing.

THE MANUFACTURE OF HANDKERCHIEFS.

BY ADAM CONVERSE.

The manufacture of handkerchiefs is by no means an unimportant branch of the textile industry. These goods are included among the imports of every civilized country in the world, and in the majority of cases the goods are in the complete finished state. For cotton handkerchiefs Great Britain is by far the principal exporter, although Germany is now competing in the coarse, cheap varieties.

Handkerchiefs, like other things, are subjected to the changes of fashion and every year sees new styles placed upon the market. Especially is this so in the case of ladies' handkerchiefs. We have handkerchiefs which in addition to woven novelty, are further ornamented by the mercerizing process, embroidery, calico printing, insertion of lace, drawn thread work and the like. It rarely happens that handkerchief manufacturing is the specialized industry of any one mill. The various styles of finish required would entail a somewhat expensive plant, which, unless the mill were fairly large, would not be fully employed.

The trade is generally carried on by jobbers who place orders for the handkerchiefs in the grey state, forward them to various finishers and finally do the making up and marketing themselves. Handkerchiefs may be broadly divided into four groups, as follows:

1. Plain.
2. Corded, ribbed or crammed borders.
3. Dobby figured borders, including satin stripes, leno stripes and the like.
4. Jacquard figured borders and centers.

The size of the handkerchief is an important consideration, being varied accordingly as it is required for ladies' or men's use, to suit the requirements of different markets, and also to compete in price.

Ladies' handkerchiefs usually measure from 12 to 15 inches square in the complete finished state. Men's handkerchiefs measure from 18 to 23 inches. Generally the handkerchiefs are square but in some cases they are made slightly longer one way than the

other. Ladies' handkerchiefs are usually made three in the width, as the cost of production is cheaper by a few cents per dozen than if made two in the width. Therefore, if handkerchiefs measuring 14 by 14 inches were required, the width of the piece would be 42 inches. Of course due allowance must be made for shrinking in the finish and also the amount of cloth taken up for the hem, before deciding upon the size of the handkerchief in the loom.

In the case of group 1, few remarks are necessary; all that is required is to obtain cloth of the necessary width and quality. For men's handkerchiefs, apart from the "bandana" type, the only ornament is usually a broad hem (hemstitched). In some cases printing in the form of spots is employed and also embroidery in the form of an initial letter. In addition to the foregoing, ladies' handkerchiefs are further ornamented by the addition of lace, etc., as mentioned above.

The application of the mercerizing process to cotton fabrics has given a great impetus to certain styles of handkerchiefs. Within the last few years, a handkerchief of peculiar liar texture has been placed upon the market under various fancy trade names. The cloth contains about 120 to 130 threads per inch in the warp of 60s and 70s to 80 picks per inch of 100s to 120s weft. It is mercerized, has a delightfully soft feel, and owing to the predominance of the warp over the weft, takes a high luster.

Probably the greatest bulk of handkerchiefs made are those on the lines indicated in group 2. They are ornamented by means of a border consisting of plain cords or ribs, and also crammed or "taped" stripes set to various designs. The cord is sometimes made by using thick material in which case a box loom is required or else the borders must be put in by hand. In the majority of cases, however, the cord is made by putting several ends or picks in the same shed and of the same counts as the rest of the fabric. To effect this special shedding, mechanism must be employed and there are two distinct kinds in operation.

In one type an ordinary plain loom is used with tappets to operate the healds. It is obvious, however, that if the shed is to be kept open for several picks in succession the tappets must be driven in a special manner. The tappets are not fast to the shaft in the ordinary way but ride loose and are caused to revolve by the engaging of a clutch box.

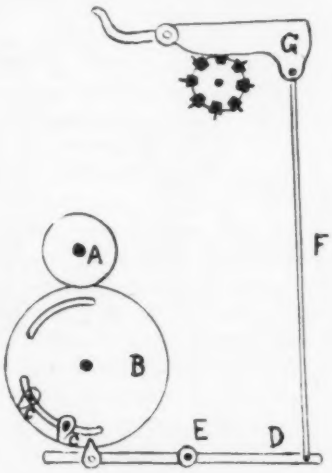

FIG. 1.

The clutch box is controlled by a pegged lattice. When the clutch is in gear the tappets revolve and plain cloth is woven. A peg in the lattice disengages the clutch and the tappets remain stationary and the shed open for two or more picks. There are three holes in the lattice. One controls the clutch; another controls the take-up catch so as to make solid cords or cram; the third stops the lattice barrel at the end of the border. The barrel is started again at the required time by a measuring device worked from the emery take-up roller.

Looms of the above description, however, are not absolutely necessary for the manufacture of handkerchiefs. A loom mounted with a double-lift dobby may be easily adapted, and manufacturers with existing machinery would prefer this means to the other. Most double-lift dobbies of the "draw knife" type are arranged so that one lag in the pattern lattice controls two picks, there being two rows of peg holes in the lag. It

follows, therefore, that if the catch which operates the lattice barrel, if lifted out of action, the barrel will remain stationary, and if the lag which is then in operation is pegged plain, the loom will leave plain cloth. This is exactly what is required when the center and margins round the borders is being woven. When it is required to put a border in the catch is dropped and the barrel stopped. The peg holes for governing G are left empty on the plain lag which is used when weaving the margins and center. When F rises, however, it will act like a peg, the jack will be lifted, the catch dropped and the barrel will commence to turn. The border lattices are pegged to keep the jack up, the barrel revolving until the border is woven and the plain lag is again reached.

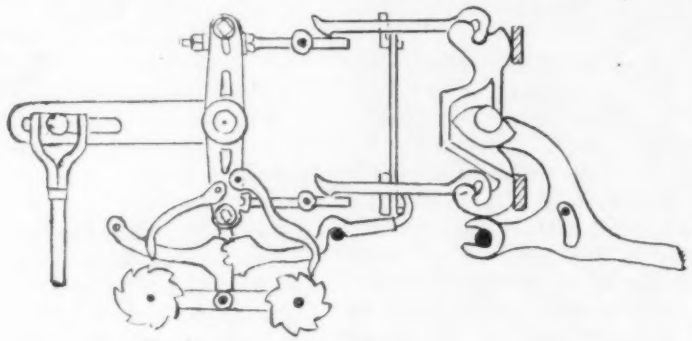

FIG. 2.

moves round bringing the lattices into operation which are pegged to give the required lift to the healds for the cross border portion.

The mechanism is illustrated at Fig. 1. A is a change wheel fixed on the end of the embroidery take-up roller and varies according to the size of the handkerchief required. It gears into wheel, B, which makes one complete revolution for each handkerchief. This wheel carries sharp-pointed studs, c c', the distance between which can be varied by means of the slots. The distance between determines the space between the borders. As the wheel revolves, the studs come in contact with a similar stud on a rocking lever, D, fulcrumed at E, causing it to be depressed at this end and raised at the other. The lever, D, carries a strong wire, F, which operates one of the indicator levers, G, in the dobby. This, when F rises up to it, has the same effect upon G as a peg in the latticed barrel. G controls a jack in the dobby. A cord attached to this jack passes over a pulley. It is then attached to the catch of the lattice barrel. If the jack remains down the catch will be held up and the barrel

The mechanism is inexpensive and easily removed when not required. Being mounted with a dobby, the scope of the loom is increased when not required for handkerchief weaving, and on the whole this method is preferable to the other.

Handkerchiefs with dobby figured borders or centers, as in group 3, requiring more than two picks to the repeat, cannot be made by either of the previous methods. As it would be impracticable to use a lag for every separate pick in the handkerchief, a special cross border dobby is required. There are several types, one of which is illustrated in Figs. 2 and 3. Two sets of pattern lags are used, one set being for the body of the cloth and the other for the cross border. Each set has its own barrel. When the required number of repeats of the body portion have been woven the barrel is moved out of contact with the indicator levers and the barrel carrying the cross border lattices is brought into operation. The indicator levers are in two sections, geared together so that either barrel can operate the draw hooks. The barrels are turned by pawls attached to the rocking lever which operated the draw

knives. Pins which project from the framework of the dobby (not shown in illustration) prevent the pawls from keeping in gear with the barrel when it has been moved out of operation.

The mechanism for bringing the barrels in and out of gear is at the other side of the dobby and is shown at Fig. 3. A lever is attached to the rocking lever which carries the barrels. A stud carries a double hooked link. This stud engages with the hooked

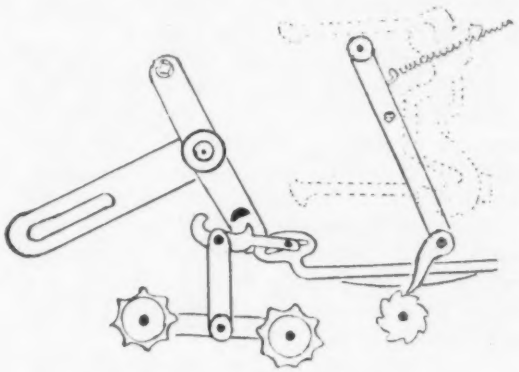

FIG. 3.

portion and moves the lever one way or the other, according to which end of the hook has been operated. This is determined by a lever which is moved up or down by means of a pegged lattice carried by a barrel. These lags determine the number of repeats of either pattern which shall be placed in the cloth. In Fig. 3 the barrel is in action, but a blank has been presented by barrel, therefore as the lever moves forward the stud will engage with the hook and swing the barrel into action. It will keep in this position so long as blanks are presented, but a peg will raise the lever and lift the other end of the hooked link, which will become caught by the stud and bring the barrel into action. A succession of pegs will retain the barrel in this position. When in action the barrels are kept in position by means of a notched stud and spring.

The required number of repeats of either weave is determined as follows: In the last lag of the lattices carried by the barrels a hole is pegged. This peg operates in the usual manner the back "beam" or "bell" lever. When this lever moves it comes in contact with a stud on the back of a lever, moving it forward and by means of the pawl turns the barrel one tooth. If ten repeats of the lattices are required and one repeat of the barrel, eleven lags would be carried. Ten of these would contain a peg and the eleventh would be blank. Almost every kind of dobby handkerchief can be woven on this machine and being perfectly automatic in the changing it prevents frequent stoppage of the loom.

Taken all around, it has much to recommend it, as it can always be used for ordinary dobby work when not required for weaving handkerchiefs. Handkerchiefs with jacquard figured borders and centers are generally made on an ordinary jacquard machine, a separate card being used for each pick, although in some instances special cross border machines are used. In other cases the cards reverse at the end of each repeat for the required number of repeats, but in such cases the style of design is limited to a perfectly symmetrical character.

Apart from the bleaching, etc., the final finishing of the handkerchiefs, i. e., hemming, boxing, etc., is an operation which could be well carried out at the mill. The finished pieces are passed through a machine with revolving circular cutting blades, which divide the piece into two or three strips as the case may be. Sometimes they are cut by hand. The strips are then cut up into separate handkerchiefs and are passed to the hemmers. The sewing machines are generally driven by power and are fitted with hemming guides, etc. After leaving the hemmer the handkerchiefs are ironed out, folded, and made up into dozens and boxed, and are then ready for the market. The superintendent of this department should have a good knowledge of the leading styles and qualities and be possessed of a fair amount of originality in the production of novelties, as the final making-up process is very important and much can be done to make the goods attractive looking, thereby insuring a ready sale.

CALICO ENGRAVING.

BY WILLIAM BLACKWOOD.

(From a lecture before the Society of Dyers and Colorists)

The art of printing or staining cloth with a view to decoration has been practiced from time immemorial. Pliny describes a method which was adopted by the Egyptians evidently similar to the process of employing woodcuts. India, Asia Minor and the Levant also practiced the process, but it was not attempted in Europe till about the seventeenth century.

Evidence exists that the first print works in England was established near Richmond, in Surrey, and there it was continued for many years. In 1738 printing was extended to Scotland, and took firm root around Glasgow, and in 1764 it was introduced into Lancashire, which is now the chief center of the calico printing industry.

At this time the decoration of the cloth was done by means of engraved blocks of sycamore wood, the parts intended to leave the impression on the cloth being left "raised," the remainder of the block being cut away to a depth of fully a quarter of an inch. For the finer class of work small pieces of copper or brass ingeniously shaped were driven into a wood block to form the desired pattern.

There was next introduced what was called the "toby" or box divided into as many compartments as there were colors in the pattern. These compartments were connected through tubes with bottles filled with the respective colors, and by means of a gentle pressure the color in each of the compartments was propelled through a sieve; on the top of the "toby" the various color divisions were walled off with pitch. The block was pressed on the "toby," which received all the colors at once, and then struck on to the cloth. This style of printing was naturally limited in scope.

Another apparatus was called the "perrotine," from the name of its inventor. In this process the figures or patterns were engraved on flat copper plates up to about three feet square. Upon this plate the color was spread, the excess being cleaned off by means of a "doctor," as in the present machine printing. The color remaining in the engraving was then crushed on to the cloth.

In 1783 the machine for cylinder printing was introduced by a Scotsman named Thomas Bell, all the engraving being executed by hand on copper cylinders brazed with spelter when brought to a circle. The machine did not supersede the block printing as quickly as anticipated, as fifty-seven years after the introduction of the machine, in 1840, statistics show that only 416 machines were at work in England, 81 in Scotland and 19 in Ireland. For block work there still remained 7,873 tables in England, 5,751 in Scotland and 584 in Ireland.

As regards engraving for the printing machine inventors were slow to move, because it was forty-five years after the introduction of printing machines, in 1828, that the mill engraving machine was introduced by Gormetz, of Mullhouse. Then came the pentagraph engraving machine, in 1834, and with these machines cheaper engraving, which led to printing machines being put down to a greater extent, and the gradual superseding of the block.

Great perfection of the pentograph machine has now been obtained, which enables some class of designs to be engraved in about half the time. The "slash arms" was a decided acquisition to this machine, allowing zinc plates to be made out on the square, and the engraving slashed on the roller, which means economy in tool making.

The flat table pentagraph machine has also been greatly improved to give steadier work, also "split bars" introduced, whereby reverse sketches can be accomplished in one tracing. The mill engraving machine has also received attention, the principal improvement being the "canting" mill-frame, which enables the engraver to cant the mill while running, without the liability of misfitting the colors. In connection with die-making, the ancient method of engraving on the die from a transferred sketch has now been superseded by penta-die, which consists in tracing a repeat of the pattern on the die in a small pentagraph machine, and etching to the required depth; the die-maker then only requires, in many instances, to sharpen the work.

ENGLISH NOTES.

(From Our Special Correspondent.)

For the third time in four years the British textile vote has gone emphatically against protection. The reason is apparently the same as before. Employers on the whole fear that import taxes by increasing their costs of production would do more harm to the foreign trade than would be compensated for by advantage in the home market. Operatives, who have seen foodstuffs rise something like 30 per cent. in the last fifteen years, object to any proposals tending to make food dearer. So long as textile people are of this way of thinking little can be done by any British government in the direction of tariff-reform.

Eighty per cent. or so of the cotton trade and 50 per cent. of the woolen and worsted trade being on foreign account, the necessity for maintaining cheap production is obvious. It is foreign demand that is now putting Lancashire industry into a better position and foreign demand that has kept Yorkshire at full pressure all the year. The total export of yarns and farbics for eleven months is $720,000,000 and there may be added to this $58,000,000 in apparel. Probably there will be $840,000,000 of textiles and apparel exported in the full year.

* * *

Both the spinning and the weaving branches of the cotton industry are back now to a profitable basis and the machines are well engaged. The blackness of the year past may be judged from Mr. Tattersall's tables relating to 73 spinning companies. According to these, a capital of $18,205,000 owning 5,973,196 was losing at the rate of 5.57 per cent. in 1909 and at the rate of 7.22 per cent. in 1910. On this showing the year closed was easily the worst in the last quarter of a century and now only dear cotton stands between Lancashire and the certainty of much better times. Such improvement as is already to hand has been long in maturing and is the outcome of a very severe struggle.

* * *

Some election use has been made of the comparative dullness in the woolen and worsted trade in America. It has been exhibited as an instance of the unwisdom of relying on one market for trade, in contrast to the English system of catering for all countries. One speaker has claimed positive knowledge of the offer to one Bradford firm of five Philadelphia mills during 1910, at discounts ranging up to 40 per cent. from their cost. Details are lacking, but probabilities favor a presumption that the mills are in the dress goods business.

* * *

The claim for $200,000 brought against Joseph Brooke & Co. by the U. S. Customs and the arrest in New York of a partner in J. F. Brigg & Son, of Huddersfield, produced some dismay in the worsted market. The Brookes have had to consult their creditors and manufacturers are naturally anxious as to the possible result of claims upon other firms. Even if charges of undervaluation are not substantiated the delays, upsets and uncertainties are serious. Matters have not been improved by the publication of a threat brought by a former manager against a large Leeds firm of worsted manufacturers. It was stated in evidence against him that he had threatened to denounce the firms to the American Consul for undervaluing their invoices. The accusation has made some other manufacturers angry.

* * *

In an ordinary way the English manufacturer or merchant does not pay the American duties and has nothing to gain from under-declaring except the favor of his customer. It is certain that declarations have been closely watched and compared by the New York authorities for many years and it is flatly not believed locally that any gross offences can possibly be brought home either to Brooke or Brigg. The Yorkshire newspapers were quick to say that the proceedings had a political origin.

There have been undervaluations in times past of goods intended for the United States. Twenty years ago one individual who sold silk goods duty-paid made an appreciable

difference in their values by inserting numerous "strings," indicating imaginary or immaterial faults. These strings were carefully cut out by the New York agent and were not allowed on the invoice to the buyer.

* * *

Notoriously, there is undervaluing of textiles sent from England to high-tariff South American countries. If sellers object (as they frequently do) to incriminate themselves, a third party is instructed to deduct a certain percentage from the actual value. The agent employed is usually one who has nothing to do with the manufacture or sale and is most often a forwarding-agent at some English port. There are custom house agents in at least one European country who pay all freight on British textiles and who are answerable for all duties and all claims for evasions and whose charge on the value of shipments is less than the bare cost of duty alone. They have a simple way of dealing with undervaluation in Morocco, Turkey and some other lands. If the declared value is suspiciously low the Collector decides to take the duty in kind instead of in cash. Instead of charging one in eight (or 12 1/2 per cent.) in currency, he takes one piece in eight out of the bales. But evidently this simple check is of no avail in countries where the bill for the duty is larger than the bill for the goods it is levied on.

* * *

A simple and reliable method of testing the waterproof qualities of fabrics which have been rainproofed is adopted by one of the largest makers of raincoats in this country. The apparatus required is a small cistern to contain water, fitted with a faucet which allows the liquid to escape only in drops. The cistern is hung at a height of six feet above the fabric that is being tested and sixty drops are allowed to fall precisely upon one place. If, after that, the piece of blotting paper which is placed under the cloth beneath the spot under test shows no sign of wet, the piece is passed as satisfactory. The coats are sold under a guarantee of replacement in case they are found defective and this test has proved an almost complete safeguard against claims. This man's cloths are chosen with a view to their suitability for keeping out water of themselves and the rainproofer is instructed to get the proof and let the handle take care of itself. Under these circumstances the garments have won a splendid reputation with the public.

* * *

The Witney blanket case, which conserved for the three manufacturers in that little town the sole rights to the word "Witney" is apparently to be followed by a "Scotch Tweed" case. At all events the South of Scotland manufacturers have prevailed on the (Government) Board of Trade to fight an action in defence of this term on their behalf. The Scotch mills have some room to complain of the abuse of this name, but at present they are not suffering perceptible harm. They are all busy and are opening again all the derelict mills in the district. Since they abandoned the attempt to make cheap goods and devoted themselves to making the best qualities their success has been abundant.

However, the experience gained since the Witney judgment goes to show that these legal triumphs are not all gain. The Witney men advertised themselves, but they also forced the rival goods into unwonted prominence and the Yorkshiremen against whom they were tilting have enjoyed better trade since that decision than for many a year. Yorkshire blankets are known more widely and esteemed more than ever by a public which neither knew nor cared where its blankets were made. Possibly, then, the attempt to engineer a little boom in Scotch tweeds will result not unfavorably to Yorkshire mills. Dewsbury tweed makers are busy enough at present to put some of their inferior and less profitable orders into German hands for manufacturing.

* * *

The Witney case seems to have had another result which lbanket makers may find interesting. Up and down the country drapers are insisting on having blankets made (or said to be made) of wool from their own

county. They make special window displays of blankets from Kentish wool in Kent and from Lincoln wool in Lincoln. It is true that Lincoln—a long, lustrous, non-felting wool—is unsuitable for blankets and so much so that the blanket makers one sees say that blankets cannot be made from it. But the seller guarantees the wool to be Lincoln and the farmers apparently have no doubts. So on goes the business and "Lincoln" blankets are being offered on all hands. The farmer's ideas of wool and cloth are quaint and in Scotland and Ireland some of them still believe firmly that the cloth they receive after a fortnight's waiting is really made from the very fleeces they sent in exchange for it. Deception apart, it may perhaps be admitted that State blankets out of State wool, assisted by stuffed sheep for the store windows and smart advertising matter, would make one way of pushing business.

* * *

There are more people wanting to put out worsted spinning on commission than people wanting to take work in. At all times there is some exchange of orders, for we have spinners who like to limit their plant to a size which can always be kept full of work and to rely on outside help with their surplus orders. Not only the regular commission spinners undertake this work. It suits spinners with too much stock of yarn to run their machines on other people's tops until the stock is down to a normal level. For the present there is no stock of yarn and customers are resorting to all sorts of artifices and devices to obtain larger deliveries on current contracts. Spinners have been made wary of the old trick which consists in leading them on to promise larger quantities conditionally on receiving a handsome new contract. The customer never places that handsome order. Instead, he demands angrily to know why they cannot deliver his old orders if they are able to deal with his new ones?

* * *

According to a factory inspector's analysis of cotton mill accidents in Lancashire a large number of mishaps have no definitely textile origin—in other words are apart from the special character of machines employed. The mill hoist is sadly productive of fatalities. Hoist-wells have to be fenced, but it is not easy to make young persons see to the proper use of the door-guards. Then in small and medium-sized mills there is no regular hoist-attendant and this introduces danger. Accidents due to neglect to use proper shafting ladders, belt hooks and belt poles figure as cotton mill accidents, but they would happen if the factory was making breakfast foods. It is proper to separate the rates of accidents in textile mills due to the use of distinctively textile machinery and accidents common to all factories in which mechanical transmission is employed.

* * *

The business in motor car hoods is looked after by most of the firms in the cotton duck trade and various qualities of duck are sold for the purpose. Some of it is dyed with cutch as a preservative. Some is waterproofed by the acetate of alumina process and some is rubberized. Rubber-proofing adds much to the cost and makes one hood-fabric, which is alleged to be made of camel hair, very expensive. Made with camel hair would perhaps be a more accurate description of a wool canvas sold for hoods and apparently manufactured from Persian hair, britch-wool and rough stuff generally. A cotton fabric with a celluloid surface is being put on the market by the makers of "Pegamoid leather cloths.

* * *

Tinsel effects would seem to be in considerable demand, to judge from the difficulty that fancy yarn spinners find in buying tinsel plate. Ribbon of 11,000 to 16,000 yards a pound is used chiefly in this country and is of Bavarian origin. Gold color is most used, with a little silver and hardly any at all of the dyed or painted fancy tinsels. The plate is twisted flat in grandrill-fashion around cotton threads and used in the cheap fancy cloth trade and to a smaller extent the plate is introduced into novelty yarns for the high-class dress tweed business. In the latter case irregular knotted or twisted effects

are sometimes sought in tinsel.

The yarn dealers, discouraged by the slow and irregular sales of tinsel plate, have given up keeping a stock of it and the Nuremburg manufacturers are asking all periods up to twelve months for delivery. There are superior English makes of tinsel plate, but the price is about $1.25 a pound and spinners are not inclined to pay more than half that money. Job lots of fancy colored plates which cost $3.50 to $4 a pound to the holders are going begging at 60 cents.

A PROTEST AGAINST MINERAL OIL FOR OILING WEAVING MACHINERY.

From the Leipziger Monatschrift fuer Textil-Industrie.

(Translated from the German by the Editor of the Textile World Record.)

The undersigned firms, bleachers and printers of cotton goods in Alsace have submitted the following protest to the Industrial Society of Muelhausen and authorized its publication:

The various processes of bleaching cotton goods intended for printing comprise the following operations:

Bleaching without Pressure.

1. Liming, that is, boiling in a lime solution. Souring. Successive boiling with carbonate of soda and soda solution.

2. Liming. Souring. Bleaching with soda and rosin soap.

Bleaching under Pressure.

The two above named methods are employed for bleaching without pressure. Boiling under pressure gives an equally good white and effects a saving of 50 per cent. of the time. In addition to these two processes of bleaching there is still another carried on under pressure:

3. Hot souring. Boiling in a soda solution.

The bleaching is always finished by a treatment of the material in a very dilute solution of chloride of lime. Some bleach works subject the goods before bleaching to a process of fermentation in order to remove the sizing material. This dissolves the sizing, but has no influence on the oil spots. Each of the above named processes of bleaching has the effect of partially removing spots of oil, but none of them remove oil spots completely. The variable quantity of paraffine found in mineral oil makes the cloth waterproof. Paraffine in solution is found in these oils. A fresh oil spot if subjected immediately to the action of the bleaching process can be removed without leaving any stain. If, however, the spots appear in pieces that have been in storage for some time, it will be found that the volatile parts of the oil have evaporated, leaving a residue that resists the bleaching process.

Singeing, which always precedes the bleaching process, has a tendency to evaporate the hydrocarbons in the oil and fasten the spots in the fabric. It has been proved that a spot made by a benzo solution of paraffine which leaves on the fabric a quantity of paraffine equal to 2 per cent. of the weight of the goods, cannot be removed completely by the bleaching process.

Mineral oil spots can be caused in the weave room. They take various forms, varying from round spots made by drops, to long streaks, such as are caused by the oil from the loom temples.

In some cases the weavers have been known to smear defects in the cloth with mineral oil in order to conceal the imperfections. Frequently threads are found in bleached goods which for a certain distance resist the penetrating action of water. These are usually threads that have been twisted onto others. Occasionally the spots take the form of streaks a quarter of an inch wide, running crosswise of the cloth, caused by oiling the heddles. Very often spots are found on the warp threads of fabrics.

The parts of the loom which are especially liable to throw oil on the cloth are the eccentric, which operates the harness motion, and the picker which drives the shuttle. The warp threads only are smeared with oil by these loom parts. Finally spots are found on the cloth which are caused by the oil thrown from the shuttles.

Spots on the warp or filling which were caused before weaving, are recognized with-

out the slightest difficulty when the goods are run through water. The oiled parts of the thread, owing to their not becoming saturated with water, appear in the form of small, fine streaks or crosses of a dull shade. When examined under the microscope the streaks are found to be limited to single threads. Only part of the pieces in a lot are usually spotted with oil. Some are free from oil spots and others completely sprinkled. In one case the spotted pieces in two lots of goods from the same weaving mill were collected together, and whether by chance or not it was found that these pieces came from certain looms that were running badly.

The weaver has a means at hand by which oil spots that cannot be removed from the goods can be prevented. It consists in the use of vegetable oil, as pure as possible. As a substitute for vegetable oil the following mixture is well recommended:

3 parts of Colza (rape seed) oil, tested for saponification.

1 part Scotch petroleum.

This mixture can be relied on by the weaver only when he prepares it himself. In one case a weaving mill which had used the mixture for 20 or 25 years, suddenly found difficulty with oil spots. The mixtures supplied by two firms were tested. One was found to contain 10 per cent. Colza oil; the other was pure petroleum. In 1890 it was found that the number of mineral oil spots increased as the price of Colza oil rose above 24 marks ($6).

For preparing the above named mixture a tank is required in which the materials are mixed by energetic stirring. Once mixed they do not separate. The mixture remains homogeneous without the necessity of further stirring.

Other oil spots which resist the action of the bleaching process are caused by the weaver's using paraffine on the warp threads. This difficulty often arises in weave rooms without the knowledge of the manager. The use of paraffine and similar mineral waxes should be avoided under all circumstances. Soaps serve as a good substitute for them.

The undersigned firms state that no practical bleaching process is known to them which will remove mineral oil spots. They, therefore, desire to record a protest against the use of pure mineral oil for oiling looms and shafting and have urged the weavers to discard petroleum oils and substitute in their place a mixture of Colza oil and Scotch petroleum prepared by themselves under the above named conditions. They take this means of making known the serious losses that result from present conditions in the bleaching, dyeing and printing industries. The reform will result in preventing the difficulties which have accompanied the use of mineral fats for oiling machinery.

Scheurer, Lauth & Co.
Dumeril, Jaegle & Co.
Gros, Roman & Co.
Schaeffer & Co.
Akt.-Ges. fuer Textilindustrie "Rotes Meer."
J. Heilmann & Co.
Koechlin Bros.
Baumgartner & Co.
Druckerei und Appretur Brombach.

MILL ORGANIZATION.

BY J. CROMPTON.

From the Journal of the Manchester Textile Society.

Although it may be stated with some degree of truth that some of the largest profits made by cotton manufacturers have often been secured by speculation, or by some trade boom, yet it would be the height of folly to minimize in the least degree the extreme importance of good organization and properly-tabulated records.

While it unfortunately cannot be denied that the frequent and extreme fluctuation of cotton prices renders the business more or less of a gamble, it must also be conceded that under every circumstance it is very desirable to be able at any time to accurately gauge, not only the financial position, but also the true reason why certain results are obtained, and the degree of failure or success attributable to any department or operation.

I believe that the good judgment which we often hear placed to the credit of the responsible head of a successful and well-conducted business, will as a general rule be

found based upon a foundation of well-organized plans, the successful working of which depends upon the faithful attention and labors of departmental managers.

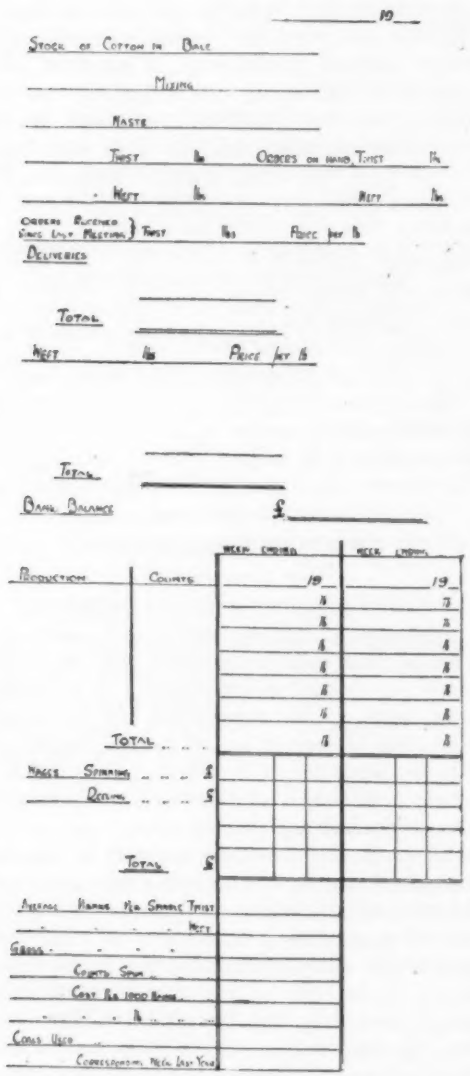

FIG. 1.

It is easy to understand that if the respective duties of each under-manager are properly defined and the matters with which he has to deal are strictly recorded, or when possibly duly tabulated, then under these circumstances it is a comparatively easy matter for the head to ascertain the exact state of affairs.

It is also more satisfactory to all concerned, if some systematic plan is in operation, whereby the exact position of each order, the exact mark of yarn used, and the particular person performing each operation, is duly recorded and properly dated, as by this means the blame for any lack of

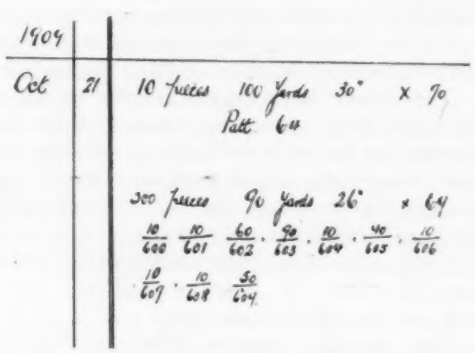

FIG. 2.

progress or faulty manipulation can usually be placed on the right shoulders, and of course the credit given to the deserving quarter.

In this paper it is, however, not so much my intention to introduce matters affecting the economical working of different departments, or to give method of working out costs for quotation purposes, as I consider these to be subjects worthy of separate papers.

My purpose in this paper is to bring before you some forms in which particulars may be recorded, the deductions from which will enable a fair basis cost to be arrived at and the exact position of orders to be ascertained. The fact that cotton trade wages are largely based on what is termed the "piecework basis," greatly facilitates the means of ascertaining the cost of production, but in fairness to the wage earner, it is advisable to keep some permanent record of actual results, and any system adopted

should be arranged with due conformity to the necessary wage records.

In the spinning section of the industry processes, any change in mode of driving or humidifying, or any variation in the cotton staple, may be compared over terms of years

No.	Yards per Cut	Counts Warp	Colour	Width	Ends	Lbs. Warp	Counts Weft	Colour	Lbs Weft	Picks	Reed	Shafts
x 69	90	30	Black	26	2240	8 2/5	36L	Bl Cft	5 5/8	72	80/2	2
x 70	100	20	Blue 3/8 fc	30	3400	21 1/4	20K	Blue	11 1/4	60	72/3	3
x 10	60	3/50 24	White Knot Cd.	28	2200 250	6 7/8 48	12H	White	8 2/5	48	78/2	2 Jufd
406	70	32	Var.	40	3200	8 3/4	14	Curl Grey Cft	16	64	80/2	2 .

FIG. 3.

the exact weight of cotton passed through the "openers," "cards," and "combers" should be recorded weekly, together with the weight of each kind of waste made at each process. Besides this, corresponding particulars should be recorded relating to different consignments and grades of cotton,

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To Messrs John Jones & Co Yarn Agents Manchester

From JOHN SMITH & Co MANUFACTURERS MANCHESTER

	End and End Lease at Each End					
Warp	Counts	Ends	Ends to Half Reed Count	Yards	Cuts	Orders No to be Put on Tickets
11	30	1120	24	900	10	126
12	20	800	20	1000	10	127
1	20	960	20	1000	10	128
17						

FIG 5.

so that the comparative degree of wastefulness or satisfactory working may be noted as a guide for future purchases. Any variation in the weight of yarn turned out, or the percentage of waste made under different climatic conditions, as well as from different spinnings, is also worthy of note. The weights per spindle which a ring frame or mule is capable of producing when spinning various counts are, of course, a matter of common knowledge, but at the same time the actual results are worthy of special tabulation from week to week. By these means the results of any change in the preparatory instead, as is often the case, for short periods only.

Some record of the actual weights produced from frames of varying numbers of

Cloth			X	70						
Patt No	60		61		62		63		64	
Colour	Blue	Red	Sky	White	Black	White	Blk	Wht	Blk	Wht
Ends per Half Reed	20	20	16	24	16	28	20	28	20	28
Ends in Warp	1600	1600	1632	1200	1632	1120	1800	1176	2400	1204
Order					Stock					
60	VIIII	II	XII	I			VIII	IX	XII	I
76										
78					IIIII	II				
					DYERS					
60	X	X	X	X			X	X	X	X
76	8	2								
78					X	X				
80										
81							7	3		
					SPINNERS					
60	8		4				X		4	
76	10									
78	16				8					
80			6							
81							8			

FIG 4.

spindles is also worthy of tabulation for comparative purposes, as these results have

a practical bearing upon economical working and a satisfactory wage basis.

Regarding the daily, weekly, or monthly routine of business, it is scarcely necessary for me to express the vital importance of an exact record being kept of all contracts entered into and to what extent orders are over or under covered, together with promised dates of delivery, weight of cotton actually in stock, and expected rate of consumption.

Count	2/40	30	16	30	2/40			2/40	20	30	16	10			2/40	16	10
Colour	6	60	Blue 1	1	1					Black					8	Red. 40	40
Stock								11	4	7	16	8				40	
Oct. 20	16			14						11					16		16
21		10						6				20			40	10	
22	14			10							18						50
23			16						40								
24		3		16							70				16		4
25		7									16						
27			4					80								10	
Total	30	20	20	40				97	44	18	120	28			72	60	70
Wound	18	20	4	30				80	14	6	86	4			52	10	50
Stock	12		16	10				17	30	12	34	24			20	50	20

FIG. 6.

Fig. 1. It is, however, advisable that the buyer and salesman should have further particulars before him when it is necessary to drive a close bargain. For example, it is a well known fact that in medium counts spinners advance the price of yarn one-quarter of a cent for each two counts finer yarn, and at certain stages one-half a cent of an advance is made instead of one-quarter.

Colour	1	60	Blue 14	14	14	6	6	6	10	10	16		Bols	Wage	No	Name
Counts	30	30	30	2/40	16	2/40	30	16	2/40	16	16					
Price	8	8	8	7	5	7	8	5	7	5	5					
1	///	//	///		/	/	///				//		15	9:2	1	Jones
2	////			///			//	///		////			16	8:8	2	Smith
3	///	////	////		//				///				17	10 7	3	Brown
4				////		////		//			////		14	7·2	4	James

FIG. 7

The compilation of such a list is a comparatively simple matter and comprises what is periodically laid before a board of directors. See

As it often happens that some manufacturers use large weights of certain particular counts, which may happen to correspond with those on which a one-half cent advance is made, it would be well for the yarn salesman to be accurately informed as to whether or not he could afford to make a concession of one-quarter cent on that particular count. In the same way a yarn salesman must be fully posted as to whether the mill

is most anxious to receive orders for yarn in bundle, ball, warp, back beams, or twist cop, in order to know where best to make any concession for the purpose of securing the regular employment for certain machines or processes.

Whatever size the mill may happen to be, it is desirable that similar statistics be available, but, of course, in a large concern the different departments will have to be conducted on a more hghly organized system than is necessary in a small mill, where possibly one man may have the whole detail concerning the working of each department largely under his personal and daily observation.

	2 Shafts	3 Shafts	5 Shafts	12 Shaft Dobby	16 Shaft Dobby	Checks. 12 Dobby	Checks. 16 Dobby
Thursday	6 19 40	1 3	159 161	283 276	2nd 254 615 700 702		388
Friday	7	14 17	72 74	300 304 112 113	402 701 408 375 3 76		321 173
Saturday	140 160	16	101 12	99 102 63 72 71	332 600 30 170 193 276	65	216
Monday	100	109	41	406 407 305 2	702 501 470 491 350		
Tuesday	64 72	108 107	75	300 300	670 654 290		271
Wednesday		110 111		361 200	30 39 103 301 670 703		
	9	10	8	19	30	1	5

FIG. 8

Plains								Checks			
	2		3		5		Dobby	Tappet		Dobby
x69 x10 406	1 4 1 3 6	x70	6 4	910	1 2 6	909 908 907 910	431 6 31 1		900	1 4 On Beams 65
	15		10		9		26			5
x69 x10 406	40 6 24	x70	1	910	4	909 908 907 910	20 16 40 103		900	8 Section 236
	70		1		4		189			8
x69 407	2 16	x70 x71 x72	114 16 18	910	60	909 822	1 41		850 518	6 41 Dobby 364
	18		148		60		42			47
On order	107		159		77		217			60
Looms Empty										
Looms Weaving Cords	9		10		8		50	1		5
Warps Out	9		10		8		50	1		5

On Beams	Section	Cheese	Stock for Dressing	Total Warps Prepared	
65	236	319	284	Gray	Dyed 30
620 Total				Dyeing 24	
				Total 95	

83 Looms Coming Empty
90 Warps Put in Looms During Week
6 Looms Weaving Cord
14 Looms Weaving Checks
Total number of looms 710

FIG. 9.

In the former case, the head manager will be largely dependent upon the accuracy of the records furnished by his subordinate, but in every case the ease with which the work can be done largely depends upon a carefully-devised system, to which attention is given at fixed intervals, and each record tabulated with due care and regard to its permanence and future value.

As hinted formerly, however, there are in every mill, whether spinning or weaving, certain daily and weekly statistics to be taken note of, which are only of material importance at the time being, such, for example, in the case of the spinner, as to whether the drawing or roving frames are ahead or behind the other frames in their capacity for production, and whether it is desirable to book orders for qualities which would employ them more fully, or whether it is desirable to relieve them, so that they may not act as a hindrance to the after-processes.

In the case of the weaver, it is advisable that he must be posted from time to time regarding the particular width and type of loom, whether check or plain, any special harness tie, or any particular type of warp which at the time would suit his preparation, and for which he is prepared to promise quick delivery or otherwise.

There are, of course, minor points in a way, but they are of considerable importance, and seriously affect the smooth and economical working, also the reliability of promises made regarding delivery.

(To be continued.)

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

Cloudy Drawing.

Editor Textile World Record:

I enclose two samples of cloudy drawing. The light grey is from a mix of 33 per cent. black and 67 per cent. white. The stock used is Egyptian about 1 in. staple comber waste. I would welcome any suggestion for improvement. I have the drawing rolls set 1 11/32 in. and 1 13/32, and think they are too close. I tried them closer than this on account of the short fiber and did not get as good results. Front roller speed, 380 r. p. m., 1 3/8 in. roll, draft in drawing rolls 5.4 with 6 ends up, 45 grain card sliver. The dark grey is strict good middling American cotton with the conditions exactly the same, and as you will notice there is the same tendency to cloudiness and uneven drawing. With both samples I tried slower speed and shorter drafts and closer settings. I think the settings are too close, but would like your opinion. Carder (1250).

Judging by the length of the staple of the samples, it would seem as if the rolls were too far apart. I would suggest that "Carder" try setting them closer. When the second roll is set as close as possible to the front roll without actually touching, the distance would still be 1 1/4 inches from center to center, using a 1 3/8-inch front roll and a 1 1/8-inch second roll, which seems too great a spread for the length of staple run.

It would be a great advantage in such short stock to have a smaller front roll, say 1 1/4 inches in diameter, so that it would be possible to close the rolls more. If "Carder" is using leather covered top rolls I would advise the following settings, but doubt if he can get that close with 1 3/8-inch front roll:

From center of front roll to center of second roll 1 3/16 inches.

From center of second roll to center of third roll 1 5/16 inches.

From center of third roll to center of back roll 1 1/2 inches.

Perhaps the tension draft between the front steel roll and the coiler calender rolls is too great. This trouble often causes drawing sliver to appear cut or uneven.

This draft can usually be increased or decreased a trifle by changing one tooth on the gear on the driving end of the coiler calender roll. If the sliver as it runs from the front steel roll to the coiler calender rolls is depressed by a pencil or small rod being pressed gradually down against it, and when the pencil or rod is quickly taken away the sliver tightens up instantly, it is an indication that there is too much tension draft. Again it may be that the weights which hold the top rolls down are not heavy enough for a frame running this kind of stock, and I would try hanging some extra weight on these rolls. Forfar.

Production of a Cooper Circular Knitting Machine.

Editor Textile World Record:

What is the average number of pounds of knit cloth that can be taken off of a Cooper spring needle circular machine, cut 14 needles to the inch, using 1/30s or 2/60s yarn. The machine runs 10 hours a day. Size cylinders running 15 to 20 inches, average size cylinders in plant about 18 inches. Blackwell (1249).

A set of Cooper machines cut 14 to the inch, running on No. 30 yarn, or equivalent, should turn off about 30 lbs. of fabric a day, but quality of winding and adjustment must be taken into consideration, especially in connection with the fine gauge. The inquiry relates to the production in pounds, without any reference to the result in dozens or yards of perfect fabric. There seems to be an impression that the Cooper machine 14 cut, turns off a small amount of work, as compared with a machine of a latch needle type. The number of pounds may not always be so great from a set of spring needle ma-

chines, but on the fine gauges, the percentage of holes, dropped stitches, etc., is small, consequently the production in dozens will not fall far behind the latch needle machine set to similar yarn and stitch. No. 30 yarn knit on 14 cut machines calls for a short stitch, and the production is limited, but there are ways by which the quantity may be increased.

In some mills, the machines are run on the piece work system which always runs up the production. They also arrange to have two bobbins of yarn in line with the yarn guard in each feed, thus doing away with the necessity for stopping the machines to tie on bobbins. This can be done by setting a bobbin holder at the proper angle with the yarn guide, joining the yarn from the top of one bobbin to the bottom of the other and allowing the bobbins to run out, a fresh one being put in place while the machine is in operation. This calls for a little care in starting the bobbins on the winder, but the results will more than repay for the extra trouble. Cumberland.

Pressing Mohair.

Editor Textile World Record:

Can you give some information on the pressing of mohair linings? Lakewood (1251).

This is a class of goods that needs very little if any pressing. If pressed at all it must be done very lightly or the goods will show a wavy effect very similar to a watered silk. I do not see why it is necessary to press these goods as they have a high luster in themselves and if handled right up to this point will look better if not pressed. I have finished and shaped thousands of pieces without pressing. However, if the goods must be pressed the process should be as follows: Rig in the regular way for the hydraulic press and put up in warm press papers and place in the press. Put on a very light pressure with no heat except from the papers. Let them stay in the press from twenty to thirty minutes.

Another method that is fully as good and which does not take so long, is to press them on an apron press. This does away with the drag and strain they undergo on the ordinary press. These goods should never be finished without being tentered on a tentering machine, whether they are pressed or not. They must be tentered and rolled on a wood shell as they leave the machines. This leaves the goods in perfect shape, free from wrinkles, and every thread drawn out and in its proper place. This process adds greatly to the luster.

The tentering machine is very similar to a chain dryer with the chains running only once the length of the machine. The chains are set with two rows of pins instead of one. The cloth enters at one end and rolled up on a wooden shell at the other. About six feet from where the cloth enters a steam box is arranged from which steam is blown through the cloth. Enough steam must be used to dampen the cloth which is dried as it passes over the coils of steam pipes that extends from the steam box to the end of the machine, where the cloth is rolled. The cloth being examined before tentering, is now ready for boxing up and shipping.

Delaware.

Light Weight Blankets.

Editor Textile World Record:

I am making light weight blankets, white warp and black filling and am having trouble with the goods coming out shady. I am running 3 shuttles pick and pick on the filling, but have trouble with the let off and take up on the old Crompton loom. Could you give me any information that would help me to get more even goods?

Huxton (1240).

These goods are very hard to make perfect, especially where the conditional take-up is used. If the looms had a positive take-up and the weavers were familiar with handling them, "Huxton" would not experience so much trouble with heavy places. There are not enough shuttles used. I would suggest that four shuttles instead of three be used, and that the boxes be run 2-1-3-4, which will give a pick from each shuttle. If a friction band is used on the beam head, make sure that there is plenty of black lead on the headings underneath the band, also wind the friction band with headings, leaving no part to come in contact with the beam head. I have had better success in using a rope let-off instead of a band, putting the rope

around the head three times. Care must be taken when the rope stretches that the weights do not work to the floor, which would cause uneven cloth. Greenwich.

Cost Systems for Ring Yarns.

Editor Textile World Record:

Can you give us a system of finding costs in detail for spinning hosiery yarn, 10s to 22s, ring spun, the mill capacity being 5,000 spindles. Please give the cost of each department, the usual mill expenses, running expenses, etc.

Our English correspondent replies as follows:

An inquiry of these dimensions is singularly difficult to handle with any certainty of giving satisfaction either to the inquirer or one's self. The machinery required for 10s is not identified with that required for 22s, and the cost of production will evidently be influenced by the way in which the mill is balanced and the proportions in which high and low numbers are spun. Perhaps the form, Fig. 1, headed "Balance Sheet Statistics," will help to show how results are examined by Lancashire mill managers. Forms like this filled up with particulars in four or five places of decimals are submitted periodically to the directors in most well-regulated English cotton-spinning mills and they are made the starting-point of more searching inquiries.

Tables furnished by S. Ecroyd, a cotton machinery expert of repute, follow and show the machinery required for a mill of 5,000 spindles turning out 10s from American cotton and the machines required for running the same number of spindles on an average count of 20s. The calculations as to wages are of course taken on an English basis. These would vary according to the particular English district in which the work was done. Similarly, the costs of premises, plant and sundries are on the English level, which is by no means the same as the American.

Mill of 5,000 ring spindles to spin 10s counts from American cotton:

Machinery.

1 Bale opener.
1 Combined opener and scutcher.
2 Finishing scutchers.
30 Carding engines with 50-inch cylinder and 45 inches wide.
4 Draw frames, 3 heads and 7 deliveries to each head, 16-inch gauge.
4 Slubbing frames, 92 spindles, each 16-inch gauge.
6 Roving frames, 160 spindles, each 20 1/2-inch gauge.
14 Ring spinning frames, 358 spindles, each 2 3/4-inch gauge.
Horse power required .....180 i. h. p.

The above machinery will produce about 27,500 lbs. per week.
The cost in wages (less manager), but including engineer, 1 carder, 1 ring frame overlooker, office staff and roller covering £35-16-0
Coal, oilers for engine 7-18-9
Or .3817d to produce 1 lb. of yarn for wages and coal.
The building would cost about .....£4,750-0-0 including engine and bed for same, shafting and lighting, etc.
Machinery approximately about £6,110-0-0
Sundries, such as bobbins, belting, cans, skewers, etc. £600-0-0

. . .

Mill of 5,000 ring spindles to spin average 20s counts from American cotton:

Machinery.

1 Bale opener.
1 Combined opener and scutcher.
1 Finishing scutcher.
16 Carding engines with 50-inch cylinder and 45 inches on wire.
2 Draw frames, 3 heads and 7 deliveries to each head, 16-inch gauge.
1 Slubbing frame of 108 spindles, 16-inch gauge.
2 Intermediate frames, each 136 spindles, 19 3/4-inch gauge.
5 Roving frames, each 164 spindles, 20 1/2-inch gauge.
12 Ring spinning frames, 416 spindles each, 2 5/8-inch gauge.
Power required .....125 i. h. p.

The above machinery will produce about 12,500 lbs. per week.
The cost in wages (less manager), but including engineer, carder, 1 ring frame overlooker, office staff and roller coverers £30-5-0
Coal oil, etc., for engine 5-5-9
Or .68232d to produce 1 lb. of yarn for wages, etc.
The building, including engine, boilers, shafting and lighting, approx. £4,380-0-0
Machinery 4,550-0-0
Sundries, such as bobbins, belting, cans, skewers, etc. £625-0-0

In the foregoing estimates no allowance is made for the following items, which are dependent greatly upon circumstances, but which must be taken into account in starting a cotton mill: Depreciation, Interest, Carriage and Cartage, Roller Cloth and Leather, Gas and Water, Ground Rent, Insurance, Banding Brushes and Skips, Directors'

BALANCE SHEET STATISTICS. 19

Average Price of Mixings ..... = _____

„ Loss on Cotton Waste and Invisible ..... = _____ %

„ Cost of Cotton Cleaned ..... = _____

„ Price of Yarn Delivered ..... = _____

Margin ..... = _____

Balance of Expenses ..... = _____

Profit ..... = _____

Profit on production of _____ lbs. at ..... = £_____

Profit as shown on Balance Sheet ..... = £_____

Difference..... = £_____

Average Cost of Wages per lb.....

Expenses (Including Interest and Depreciation) .....

Discount on Yarn .....

..... _____

_____

Waste .....

Cellar Gain .....

Balance of Expenses .....

..... _____

_____

COTTON.

_____ Stock...

Invoiced ..... _____

Stock... _____

Used .....

Waste made ..... _____ = _____ %

Yarn Produced ..... _____

Invisible Loss ..... _____ = _____ %

YARN.

_____ Stock

Produced ..... _____

_____ Stock .. _____

Delivered ..... _____

Cellar Gain ..... _____

_____ %

Average Counts Spun during Quarter..... ..... _____

Salary (if company), Manager's Salary, Auditors' Fees, Stamps, Printing, Commissions on Yarn, Bank Commission, Loss in Cotton Waste, etc., as indicated on accompanying balance sheet.

Cloth for Tires and Motor Car Hoods.

Editor Textile World Record:

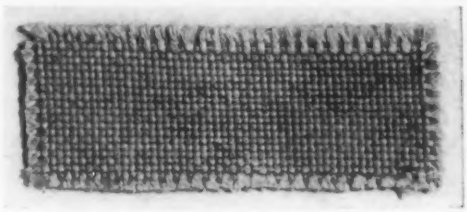
Please inform me what kind of cloth is used for automobile tires and for the hoods of motor cars?

Peasant (1135).

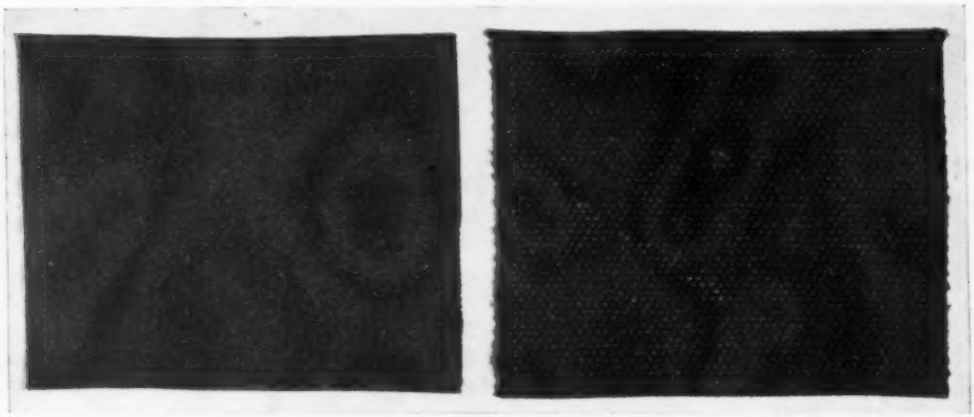
Our English correspondent replies to this question as follows: I find that one maker uses a fabric intermediate between the two patterns that I am sending herewith. The fabric is yarn dyed to a reddish shade that is produced by the use of cutch. This dyeware (catechu) is valued for its preservative effects on the fiber which it more or less "tans," thus preventing rotting. Further, to prevent rotting this maker of tires has his fabric subjected to a kind of cravenette process, of which the purpose is to resist any water that may enter a worn tire.

The two patterns, Nos. 1 and 2, sent with this letter are cloths used in making motor car hoods. The price of No. 1, 60-inch 32-ounce duck, is about 85 cents. Note the large size of the warp in relation to the size of the filling and observe that it is yarn dyed. The lighter cloth, No. 2, is of a more balanced structure and piece dyed. It seems to have been dyed first with yellow and to have been topped with cutch. Motor lamp covers as well as hoods are made of cloths like this.

I also send sample, No. 5, of an improved cotton duck for automobile tires. It is made specially for rubbering. Both warp and filling are of 11-fold Egyptian. The interstices are plainly visible on holding the sample to the light and these as well as the surface are designed to give a good "key" or hold to the rubber. This pattern is undyed, but like the others is rainproofed as a preservative against accidental exposure to water before it is cut up and rubbered. Wessex.



COTTON DUCK FOR AUTOMOBILE TIRES.



CLOTHS USED IN MAKING MOTOR CAR HOODS

We have analyzed the three motor car fabrics accompanying the above reply, and obtain the following results:

No. 1. Yarn Dyed.

Warp, 38 threads per inch 5 ply 7.6s cotton.
Filling, 25 threads per inch 3 ply 12s cotton.
Weight, 35.8 ozs. per yard, 60 in. wide.
Weave, plain.

No. 2. Piece Dyed.

Warp, 40 threads per inch 2/10s cotton.
Filling, 50 threads per inch 2/13s cotton.
Weave, plain.

No. 5. White.

Warp, 24 threads per inch 11 ply 19.4s cotton.
Filling, 22 1/2 threads per inch 11 ply 20.6s cotton.
Weave, plain.
The sizes are for the yarn as it lies in the cloth.

India's Cotton Industry.

Editor Textile World Record:

Can you tell me anything about the cost of producing cotton yarn in India?

Constant (1217).

The cost of production varies with different mills. A very few mills exceptionally situated as regards their finances, equipment and large output, can bring the cost of production down as low as 10 1/2 pies (1 3/4 cents) per pound; but they are few indeed. The average cost may be fairly stated at 13 pies (2 1/6 cents) per pound for 10s, 12s and 20s, exclusive of agents' commission, which is a very variable factor.

This is from Bombay's leading newspaper and it confirms closely a statement obtained from a Bombay mill manager in charge of eight mills. From him I hear that the usual reckoning for converting clean cotton into any count between 4s and 20s is one anna per pound. There are twelve pies in one anna and the anna is equivalent to 2 cents, being one-sixteenth of the rupee. "Constant" will not be very far wrong in calling the cost 2 cents a pound for low counts. For high counts I have authority for saying that Bombay costs on imported American and Egyptian cotton run from 4 annas up to 6 annas (8 to 12 cents). The latter is the cost of spinning 80s. The manager whom I have mentioned agrees that some mills do produce low counts at the ten and a half pies (1 3/4 cents) named by the newspaper. He says that they are mills that, for one thing, are favorably situated for water and do not have to pay 16 cents per 1,000 gallons (10,000 lbs.) as mills in Bombay have to do.

Agents' commission is a very variable factor in Indian mill expense accounts. Substantially, the mills are turned over to firms of mill agents who are often the men who promoted and founded the mill. Not all of them are expert in manufacturing, but they buy and sell goods and lend and sometimes borrow money and, subject to the control of directors who come once a month to collect their $10 fee for attendance at the meeting, the agents are able to do much as they like.

Open Mesh Fabric.

Editor Textile World Record:

Where can I obtain a loom for weaving netting like the enclosed sample? Edinburg (1178).

We forwarded the inquiry and sample to our French correspondent, who writes as follows:

Enclosed is your sample of netting, Fig. 1, also another sample of the same class of goods, Fig. 2. Both are made on the same

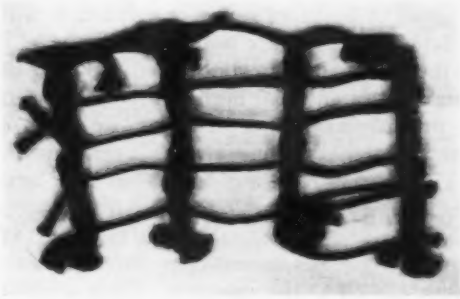


FIG. 1.

machine, but your sample has only one kind of filling, whereas Fig. 2, which I send, is made with two kinds. The loom is built by Roger, Durand et fils, Villeneuve, St Georges (S. and O.), France. The loom is 22 inches wide, and costs 1100 francs ($220) f.o.b. Villeneuve. The same firm also builds the machine for attaching the tin clips or tags to the fabric, for holding the thread in place, and of which there are three on Fig.

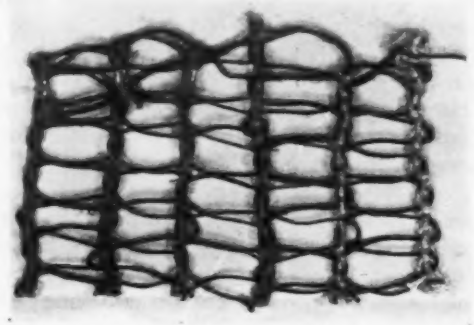


FIG. 2

2. Very few know about this class of goods and it has been necessary for me to write a number of letters before obtaining the information given above. Gaul.

Knitting Department

THE KNIT GOODS SITUATION.

Since our last issue, there has been a considerable volume of heavy weight business placed and the new year finds most of the larger, well known manufacturers in a well satisfied frame of mind in regard to the amount of business so far taken; but it is intimated that they are not so well satisfied as to the prices they have obtained, and it is the opinion of many that higher prices are bound to prevail very soon. In fact, we learn of some advances having already been named.

The Perry Knitting Co., who are large factors in the production of children's goods in ribbed and fleeced fabrics, are asking advances of 5 to 7 1/2 cents per dozen over the prices named at the opening. They are now offering their line of children's cotton ribbed goods at $1.12 1/2 for size 16, rise 12 1/2 cents, and the flat fleeces running in weight from 6 1/2 pounds on size 32 are being held at $1.72 1/2 for size 24 with a rise and fall of 12 1/2 cents per dozen. These people also show a line of children's combed yarn ribbed goods at $1.25 on 16, rise 25 cents, less 15 per cent., and they have also achieved quite a reputation on account of a boy's union suit made on interlock machines which they sell at $2.75 on size 2, rise 25 cents. It is understood that a very heavy business has been placed on this line.

The orders that are being placed on men's fleeced goods so far have been very satisfactory to the manufacturers. This class of merchandise seems to be as popular, if not more so, than it was a year ago.

Some of the Southern mills are showing fleeces as low as $3.37 1/2 and orders for these are being placed freely by the large Western and Southwestern jobbers. The Union Mills have opened their line of fleeced goods at practically last year's figures and this means a garment, weighing 12 1/2 pounds on size 42 at $3.50, 13 pound at $3.62 1/2 and one running 13 1/2 to 14 pounds at $3.75, in addition to which they show their standard Union Sanitas silk trimmed line at $3.90. It is a difficult matter for some to explain just how these figures can be named when cotton yarns are ruling so much higher than last year. Nevertheless, the fact remains, and buyers are placing their orders very freely at these prices.

The High Rock Co. have three weights of men's fleeced goods in their line for 1911, one weighing 13 1/2 pounds at $3.75, one weighing 13 3/4 pounds at $3.85, and one, 14 pounds at $3.90. The latter number is a restricted price garment and the jobbers are entitled to this price only on the condition that they maintain the jobbing price of $4.45 throughout the season.

The Troy Knitting Co. also make a 14-pound fleeced garment trimmed with silk galoon binding which they are quoting at $3.75. These people also have two men's fleeces made of random yarn, very sightly in appearance that they are getting $4.00 for.

The season just past has shown that there is still a considerable sale of fleeced goods that reaches the consumer at 75 cents a garment and some excellent values are being shown by the Utica Knitting Co., Wright's Health Underwear Co., Union Mills and Troy Knitting Co. at $4.75 to $5.25. There is little demand for fleeces over 75 cents a garment, except among the country trade, where there is quite a quantity still sold of Wright's goods which are advertised quite extensively at $1.00 a garment. This is a restricted price line that cost the jobbers $7.12 1/2 net, and are to be sold to retailers at $9.00 regular.

Business on men's flat wool shirts and drawers is unquestionably being affected to some extent by the increased demand for union suits, and road salesmen for some jobbing houses whom we have talked with, give it as their opinion that this demand will be much increased for the coming season. Among the most important manufacturers of suits are the Atlas Knitting Co., and the Piqua Hosiery Co. of Piqua, Ohio. These two concerns are showing a wide range of

qualities and weights for the coming season, beginning with a cotton garment, weighing 17 pounds to the dozen in plain or tuck stitches at $7.50, and running up to a line of fine worsted at $42.00 per dozen.

The Atlas Knitting Co. have changed their manner of making combination suits and are using the wide flap seat pieces with set-in shoulder, and cuffs and anklets on all numbers in both plain and tuck fabrics.

The Fuld & Hatch Knitting Co. of Albany, N. Y., are showing a worsted plaited combination suit as low as $10.50 per dozen, and it is understood that some large orders have been placed on this line.

HOSIERY.

The cotton hosiery business for fall, 1911, is in an unsatisfactory state just at present. Manufacturers claim to be showing their lines at prices that barely permit them to break even, and that they must soon make advances, but in the face of this, buyers do not seem to be inclined to place orders at all freely and a waiting game is being played to a certain extent. Buyers appear to be willing to pay last season's prices for cotton hosiery, but manufacturers state that it is necessary to get advances of five to ten cents per dozen. With an advance in the yarn market and no leeway for manufacturers to reduce their prices, it looks as if buyers must give way before long and place orders so as to get samples and get their travelers started on the road.

Practically all lines of wool and worsted goods are open and a number of them are being shown at the same prices as last season, and selling agents and manufacturers who have been on the road, report a very satisfactory business thus far.

Reports from jobbers are that retail hosiery stocks are low and that there is every reason to look for a good demand, both for immediate and future delivery.

The call for very thin, sheer qualities has spread so that the trade in cities, and even in the smaller towns now call for cobweb weights in January, the same as in July.

In the larger retail stores during December, it was noticed that extra efforts were being made to interest the Christmas shoppers in hosiery for holiday gifts and some very attractive packages in the way of holly boxes were shown. The opinion of several retailers is, that much more hosiery was sold for gifts than any former Christmas season. The fact that silk goods were obtainable at such moderate prices helped to make it easy to get up attractive packages.

Orders on spring lines show an increasing demand for lace goods for men and women, and it is now predicted that lace goods for women will be particularly good during the coming season, especially in colors to match the gowns that will be worn.

Knitted Auto Caps.

Editor Textile World Record:

Your October issue shows a knit auto cap made somewhere in the State of Massachusetts. Will you kindly give me the name and address of the maker? Knitter (1252).

The knit auto cap is made by the Orange Knitting Co., of Sherburne Falls, Mass. The Monarch Knitting Co., Buffalo, N. Y., also make a similar cap with a sateen lining.

A KNIT AUTO CAP.

During the past month there has developed a very heavy demand for a hand knit turban similar to the one illustrated and these are taking the place of the hoods to some ex-

tent. They are made of a coarse number of zephyr and roving yarns and are sold at retail from $1.50 to $3.00 each. It is difficult to get them delivered as fast as wanted.

Fillmore.

THE "BANNER" AUTOMATIC KNITTING MACHINE.

The illustration (Fig. 1) shows the latest automatic machine built by the Hemphill Mfg. Co., Pawtucket, R. I. This machine is designed especially for the manufacture of split foot hosiery and embodies several other important features which the manufacturers believe make this machine unexcelled for this class of work. While it is the latest hosiery knitting machine to come from the Hemphill works, it has been in operation in some of the best mills of the country with very gratifying results. What is probably the principal advantage offered by this machine is the use of a double feed for knitting the leg. In this way two courses are knit at every revolution of the machine, which compensates for time unavoidably lost by the reciprocating motion necessary for knitting the foot. The production of the machine is thus greatly increased without any increase in the speed at which it is run.

The builders inform us that on the best class of work the machine will knit four dozen per day on a 200-needle 3 1/2-inch cylinder or a 220-needle 3 3/4-inch cylinder. The split foot machine enables manufacturers of hosiery to use silk for the leg and instep and mercerized or other yarn for the heel, toe and bottom portion of the stocking. Knitters will readily understand that this is an important advantage as compared with the work of the plain machine. The machine is adapted for other kinds of yarn and is fully automatic, inserting reinforcing thread in the heel and toe and making a high spliced heel. Fig. 2 shows a split foot stocking made on a "Banner" machine. At present there are over four hundred of the "Banner" split foot machines in successful operation in the most progressive mills of the country.

The Hemphill Mfg. Co. also build a double feed machine for making either half hose or ladies' hose. In making what is known as string work, the machine will knit the leg twice as fast as is possible on the single feed machine. The machine is fully automatic and capable of a very large production.

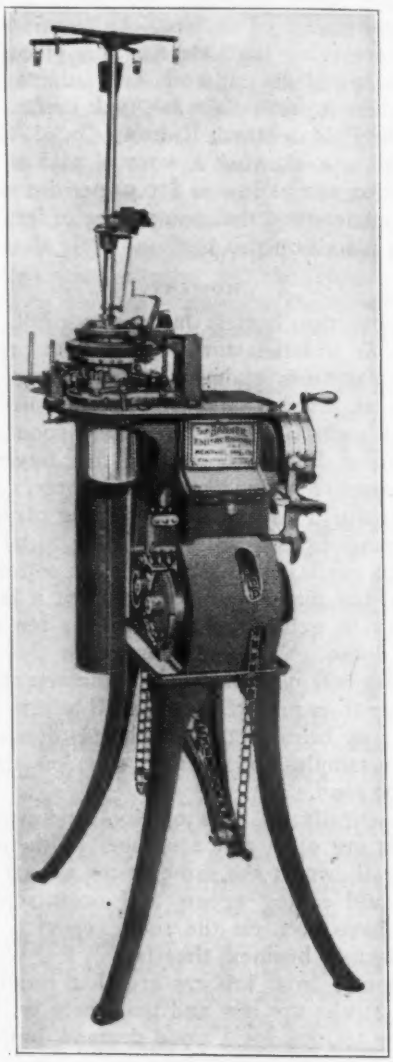


FIG. 1. THE "BANNER" AUTOMATIC KNITTER.

The Hemphill Mfg. Co. have been steadily increasing their production and at the present time are turning out about fifty machines a week. A very significant fact is that they have never employed a salesman to solicit

business, having sold their product direct from the works, leaving the machines to speak for themselves and bring repeat orders. During the past six months the orders have been beyond the ordinary capacity of the works, which have been running until nine o'clock at night. They have at present 3,800 machines of all kinds in operation in different mills and expect early in 1911 to have facilities for turning out sixty to seventy machines per week. Arrangements have been made with the Wildman Mfg. Co., Norristown, Pa., to represent the Hemphill Mfg. Co. in all foreign countries and good business is now being done with Europe. The Hemphill machines are fully protected by patents in the principal manufacturing countries of the world.

FIG. 2. A SPLIT FOOT STOCKING MADE ON A "BANNER" KNITTER.

METHODS OF COST FINDING IN KNITTING MILLS.

Discussion Continued from December.

Editor Textile World Record:

In computing a table of cost for knit goods one can comply with the request only so far as it affects the business he is engaged in. I do not know of any two manufacturers whose plants are alike in size, method of production, or kind of help employed, so what would apply to one would not in all cases be suitable to the other. Then again one with good foresight may buy cotton, yarns, etc., in large quantities when the market is low, and another may produce his own yarns. The price of cotton is so uncertain that I thought it best to have a fixed price for this staple of 12 cents a pound. To this is added cost of waste, seeds and dirt, 14 per cent., which will bring the cost up to .1368 cents a pound.

To make this into 22s white yarn add 6 cents, or .1968.

Boxing, packing, winding, etc., add 2 more cents, or .2168.

The assortment in a dozen of knit goods will run from 34 to 46 shirts and 30 to 44 drawers in men's goods, so the average size must be found. We will take for an example a size 40 shirt. After weighing a 20-inch roll which has been knit, we note the numbers of pounds of face yarn, tying in yarn and backing yarn it takes to make this roll. Follow this to the cutting room and it will be found that this piece will make 4 dozen goods with some waste. Going back to the yarn it will be found that it takes 6 pounds of face yarn and 7 pounds of backing yarn to knit this roll.

Six pounds of the face yarn costs $1.30, at .2168 cents a pound. To get at the cost of the backing yarn it is necessary to determine what grade is used. In this case we will assume it is Peeler comber, mill waste and some garnetted clips. If cotton is 12 cents

a pound, add 5 per cent. for waste in hoops and sacking in the peeler, which is .1260 and 90 per cent. or .1134 cents. To make a batch of 200 pounds, 140 pounds of peeler would be put in, 40 pounds of garnetted waste and 20 pounds of spinning and winding waste. This would cost:

140 lbs. at .113	$15.87
40 lbs. at .07	2.80
20 lbs. at .06	1.20
200 lbs. at .099	$19.87
Backing, 7 lbs. at .099	.693
Face	1.300
Production	.801
Material	.410
	$3.204

For production take the number of dozen finished, or pressed for the month or fortnight. Dividing the pay roll by the production we obtain 80 cents per dozen. The material will vary in cost each year, but will average on a three years' basis about the same, that is 41 cents. It takes some calculation to get at this item. If the manufacturer will take 2 ounces of thread and note how many dozens it will button-hole, button sew, seam, overseam and finish, the cost can be determined exactly for this item, and in like manner for the trimmings. To this cost is added the much disputed fixed charges, coal oil, rent, power, repairs, interest on capital, office expenses, insurance, taxes, commission, freight and discounts, which can be determined by the bookkeeper.

Summary:

Face yarn	$1.38
Backing yarn	.89
Finishing	.80
Materials	.40
Cost exclusive of fixed charges, to equal	$3.27

J. A. H.

Editor Textile World Record:

The goods on which the following cost estimate is based are made of cotton yarn, although it would apply in almost any underwear mill:

1. Cost of yarn.
2. Cost of winding.
3. Winding waste.
4. Cost of knitting.
5. Cost of sleeves, collar, cuffs, etc.
6. Knitting waste.
7. Broken needles.
8. Scouring and bleachings.
9. Cutting.
10. Cutting waste.
11. Cost of finishing.

a—Seaming, overseaming and sewing in sleeves.

b—Sewing on cuffs, if any.

c—Marking for neck.

d—Sewing in neck and putting on collarettes, if any.

e—Putting in fronts, sewing on bands, facing and trimming.

f—Cost of trimmings, etc.

g—Marking for buttons and button holes.

h—Sewing on buttons.

i—Sewing button holes.

j—Finishing off around the bottom.

k—Inspecting.

l—Mending.

m—Pressing.

n—Parceling.

12. Shipping.
13. General expense, including handling yarns, etc., wear and tear on machines, power, light, heat, office help, watchman, etc.

The cost depends largely upon the production. One very important item is the knitting waste. This is where the loss is experienced in most mills, and the best way to keep track of this waste is to send daily reports to the knitter every day. A certain amount of waste is allowed for every dozen knit, and each day the waste is weighed up at the cutting table. If it exceeds the allowance it will show a loss in the loss column of the report sent to the knitter, but if the waste is less than the fixed amount it will show a gain in the gain column of the same report. In this way the knitter is kept informed of the amount of waste.

R. T.-O. Knitting Co.

Editor Textile World Record:

We enclose a form, Fig. 1, which we originated some years ago and which has proved to be of some value. We used this form long before the craze for "systems" and "cost finding" devices came into fashion. Obviously the dullest manufacturer would want some notion of the cost of the goods he is making. We do not undervalue "systems," but it seems to us that there is a danger of getting the idea that a "system" of some sort is all that is needed. Unfortunately these devices do not make the goods cost any less, nor obtain from the customer a price in proportion to the cost of the goods.

What is wanted in the knit goods "industry" is a larger proportion of business men to run it, men who can distinguish between cotton at 7 cents and cotton at 15 cents, and who do not regard 25, 50, 75 cents and $1.00 as idols to be worshipped, men who will maintain or even improve their quality and raise prices in proportion. The public,

Yarn lbs. @
" Sk.
" Mer.
Cuffs lbs. @
Winding lbs. @
" Sk.
Knitting lbs. @
" Cuff
Cutting
" Goods
Cuffing
Topping
Ribbing
Seaming
Covering
Royalty
Putting in gussets
Mending and Marking
Boarding
Mending
Trimming

Finishing Shirts.
Making Fronts
Putting on Front and Stay
Hem Neck Finishing and Catch Silk
Hemming
Royalty
Sewing Silk pcs.

Finishing Drawers.
Hem Fronts
Putting on Band and Back Tape
Two Rows Stitching
Taping
Back Gores
Button Holes and Eyelets
Inspecting and Stamping
Pressing
Taking Out
Buttoning
Folding

Trimming Shirts.
Yd. Silk @
" Satteen @
Lining and Button Stay
Thread
Buttons gro. @
Silk Thread

Trimming Drawers.
Yd. Satteen @
Sus. Tapes
Back Tape
Thread
Lacing
Buttons gro. @
Silk Thread
Boxes @
Labels and Tapes
Bands
Cases and Nails

Labor.
Knitting Room
Seaming "
Finishing "
Shipping "
Dyehouse

Sundries.
Dyes and Coal
Dyeing Yarn
" Goods
Washing "
Machinery Supplies
" Repairs
Insurance
Freight
General Expense
Rent and Power
Taxes, Light and Water
Management and Office
Salaries
Depreciation
Contingencies

Summary.
Yarn
Piece Work
Trimming, Boxes, etc.
Labor
Sundries

FIG. 1.

which is necessarily ignorant regarding the goods it buys, would be better served. They would learn after a while that buying rubbish does not pay, but it must be admitted that it is uphill work and a thankless job to try to teach them. H. M. M., Treas.

AN IMPROVED SEAMLESS STOCKING.

This stocking, recently patented, has a seamless heel and toe and seamless leg with shaped portion for the calf, having a band resembling the bordering wales. The stocking is provided with gussets by which the instep is made wider than the other part of the foot.

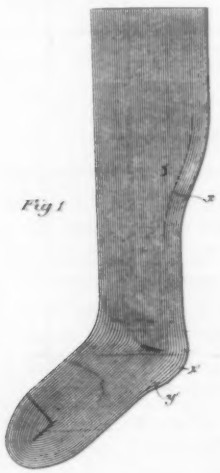


FIG. 1.

Fig. 1 shows the improved construction, the wales of the stitches being represented by single lines; Fig. 2 is a view of part of the web, showing one method of fashioning it; Fig. 3 is a similar view, illustrating another method of fashioning; Fig. 4 shows the arrangement of the needles in the machine on which the improved stocking is knit.

The small circles numbered from 1 to 72 inclusive, Fig. 4, represent the cylinder needles of a circular machine, provided with means for knitting seamless heel and toe pockets; the letters from a to q and from a' to q' inclusive, represent fashioning needles which operate in an annular dial surrounding the cylinder above the top, whereby these needles draw stitches in the same direction as the cylinder needles, and hence produce a plain web. The machine in this respect is distinct from one of the rib type, in which the dial needles are located on the inside of

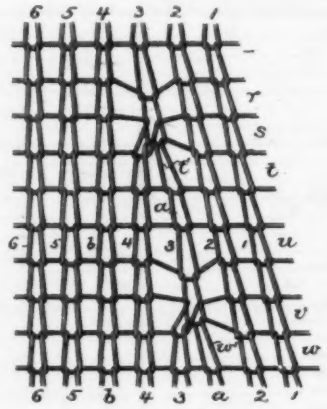


FIG. 2. A VIEW OF PART OF THE WEB.

the cylinder and draw stitches in a direction opposite to that in which the stitches are drawn by the cylinder needles.

The knitting begins at the toe portion of the stocking with the cylinder needles only

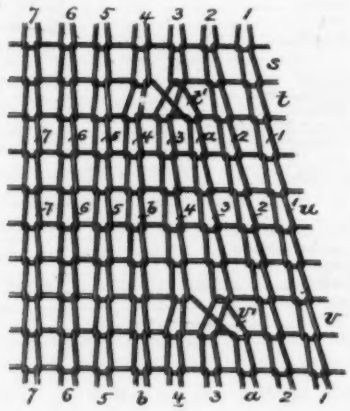


FIG. 3.
ILLUSTRATING ANOTHER METHOD OF FASHIONING.

in operation, the first step being to form a few courses of stitches upon all of the cylinder needles, then to throw one-half of the needles, for example, those from 19 to 54, inclusive, out of operation while permitting

them to retain the loops of stitches formed upon them. To-and-fro knitting is then resorted to upon the remaining needles and the web is fashioned by first narrowing and then widening upon the end needles of the set in the usual manner to produce a seamless pocket.

When this is completed, the needles from

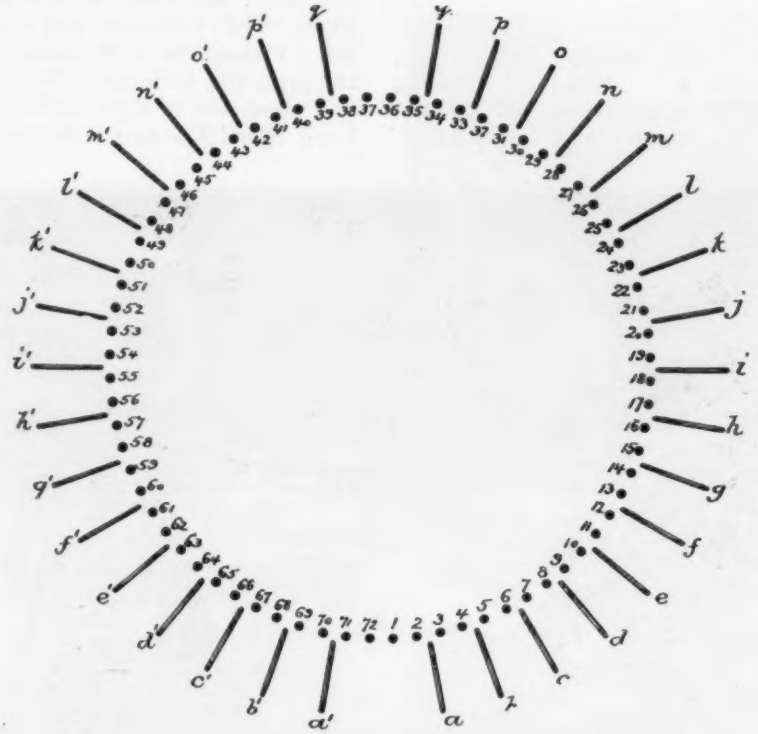


FIG. 4. SHOWING THE ARRANGEMENT OF THE NEEDLES IN THE MACHINE.

19 to 54 are brought into action and tubular web for the foot of the stocking is produced, this operation continuing until it is desired to introduce gussets for widening the instep portion of the stocking. The stocking has widening wales, y, for shaping the calf portion of the stocking and other widening wales, y′, forming gussets in the foot portion, and outside of the widening wales, y, in the calf is a band, x, and outside of the widening wales, y′, a narrower band, x′, each of these bands consisting of a series or group of continuous parallel wales which resemble the bordering wales formed on the edges of the flat web from which the ordinary full fashioned stocking is made. Although in this improved stocking the wales comprising the bands, x and x′, are part of a continuous tubular web and not wales on the borders or edges of a flat web, these groups of continuous parallel wales constituting said bands, x and x′, are referred to as bordering wales, which they are in the sense that they border the widenings whereby the shaping of the calf is effected and the instep gussets are produced. The needles upon which the gusset wales are formed are at a, b, a′ and b′, the needles from c to q and c′ to q′ inclusive, being those which form the widening wales in the calf portion of the leg of the stocking. The cylinder needles 1, 2, 71 and 72 are those upon which the bordering wales, x′, are produced, and the cylinder needles 1 to 6 a, b, 67 to 72 and a′, b′ are those upon which the

bordering wales, x, are produced, the needles from 7 to 66, inclusive, being standing wale needles. The needles, a, b, produce the gusset wales on one side of the foot of the stocking, and the needles, a′ and b′, produce the gusset wales on the other side of the foot.

A WELL ILLUMINATED KNITTING MILL.

BY FRANK B. RAE, JR., AND ROSCOE SCOTT.

PART II.

In the Brooklyn factory of the Long Island Knitting Mills the sewing, pressing and packing tables are located on the first floor, while the winders, sleevers and knitters are on the upper floor; the illumination of this machinery was discussed and illustrated in our previous article. The situation may be summed up by saying that for machines which require constant close attention to detail, it is absolutely necessary that a strong light, carefully shaded from the operator's eyes, be shed upon the work,—while for such machinery as is provided with automatic means for stopping in case the threads break or tangle, a more uniformly distributed light is better for the eyes and is actually safer, since it eliminates strong contrast of light and shade and dissipates the shadows. Illumination for both classes of machinery is secured with a high degree of efficiency and satisfaction in the particular mill under discussion by the use of Holophane steel reflectors and Mazda incandescent lamps properly selected as to size and type, and judiciously located.

A great deal of night work is done at the Long Island Knitting Mills, and this makes it doubly necessary for the artificial lighting to be not only effective, but unobtrusive. An experienced illuminating engineer recently remarked that the most successful artificial lighting, from a physiological point of view, is that which enables a normal person to see so naturally that he never thinks of the lighting at all. An example of this

FIG. 1. CUTTING TABLES ILLUMINATED WITH HOLOPHANE STEEL REFLECTORS AND MAZDA INCANDESCENT LAMPS.

unobtrusive sort of illumination is shown in Fig. 1, a view of two of the cutting tables. The apparent glow around the lighting units is due merely to "halation" caused by reflection from the back of the photographic plate, and of course, is not seen by the cutting operators. If one looks at the goods on the tables, he will agree that the shadows produced by the bundles of cloth and sharpness of every detail combine to give an effect practically indistinguishable from that which would be obtained on a bright, sunny day. The artificial lighting using Mazda lamps has one advantage over daylight. It is for all practical purposes uniform in intensity, while daylight varies with every cloud that crosses the sun and with every puff of factory smoke that blows past the windows.

Considerable experimenting was done before really satisfactory working conditions were secured at the sewing tables. Of these there are three, each 4 ft. by 36 ft., seating ten operators at a side, the total seating capacity being sixty. The first method employed for the lighting consisted in installing a number of arc lamps high up in the room, these being supplemented by unshaded 16 candlepower carbon incandescent lamps, suspended directly over the tables, one light between each pair of operators. The glaring effect of such an arrangement can be better imagined than described, and doomed this system before it had been in many weeks. The present system provides a separate light for each operator, the units being suspended by adjustable cords in two rows per table, 25-watt carbon filament lamps fitted with 45° Holophane reflectors being used. This size of lamp gives normally 8.1 candlepower without a reflector. Each operator is thus enabled to adjust the direction of the light so that it will show up the details of the work, whether it is button-holing, sleeve sewing, or what not, to the best advantage; and best of all, she is no longer compelled to be "glared at" by the unshaded lamp filaments which have a brilliancy of several hundred candlepower per square inch. "Light on the work, not in the eye" is the principle that has here been adopted.

If any criticism were to be brought against the illumination of the sewing tables, above described, it might concern the choice of lamps. Had 25-watt tantalum instead of 25-watt carbon lamps been used, about 50 per cent. more light could have been obtained with the same consumption of current. The tantalum lamp, moreover, is very strong mechanically and gives exceptionally good performance when burned on direct current; it would therefore be well adapted for replacing the few carbon lamps in this mill, where direct current is used throughout.

FIG 2. AN AISLE IN THE PACKING DEPARTMENT.

The stock tables are illuminated by a single line of units consisting of extensive type Holophane reflectors with Mazda 40-watt lamps. The extensive and intensive types of steel reflector, while somewhat similar in external appearance, differ in their uses, the extensive directing the light downward at a fairly wide angle so that the strongest rays make an angle of about 40° with the vertical, assuming the lamp to hang vertically, while the intensive reflector gives a more highly concentrated light over a more restricted area, the strongest rays

making an angle of about 30° with the vertical.

A general view of one aisle of the packing department is given in Fig. 2. Only a single end of each table is used for packing, the goods being stacked up on the other end. The illuminating engineer, with an eye to economy, took advantage of this fact by placing a strong light over the packing spaces, and a less intense light over the piles of goods. The construction is shown clearly in Fig. 3, which also indicates the sizes of lamp and types of reflector employed.

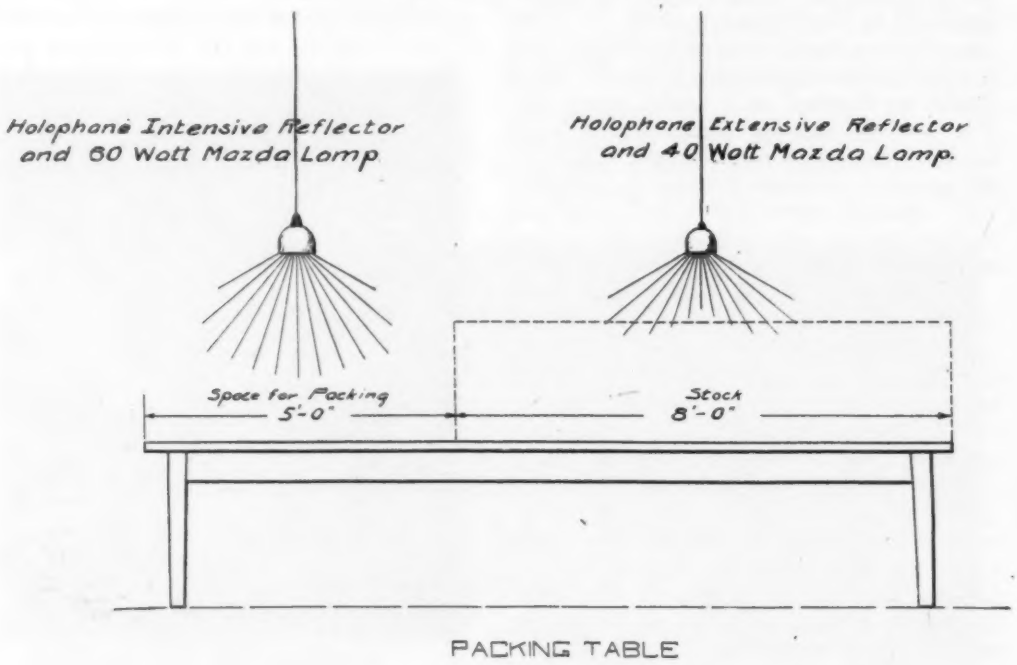


FIG. 3.

The office of this progressive concern is as well illuminated as the factory, although the requirements are, of course, vastly different. Here are installed, not steel reflectors, but Holophane high efficiency glass reflectors with Mazda incandescent lamps. The sparkling appearance and graceful lines of the reflectors give a decidedly decorative touch to the lighting, while the combined efficiency of lamps and reflectors insures a bountiful supply of light on desks and ledgers at the minimum expenditure of current. Curiously enough, taking the building as a whole, there is an average of almost exactly one lighting unit (i. e., lamp and reflector) per employe. This should not, however, be taken as a criterion of the number of units to be expected in other well lighted knitting mills, except perhaps as a very rough first approximation.

Unlikely though it may seem at first thought, the most satisfactory thing about the illumination of this mill from the manager's viewpoint is not that it saves current, although it does that. The point of greatest importance is that the employes are given proper lighting conditions for the performance of their duties, and are satisfied with those conditions, as evidenced by the lack of complaints. Any manager can vouch for the effect of contentment among employes upon quality and quantity of output.

The number of looms engaged on cotton goods in Canada is given at about 21,000.

KNITTING MILL NEWS.

New Mills.

*Canada, Ontario, St. Thomas. The Monarch Knitting Co., Ltd., Dunnville, is building the proposed plant here and expects to employ between 200 and 300 hands as soon as it is completed. They will install machinery for manufacturing the same lines as they are making in Dunnville, and may possibly add underwear and other lines, this depending on the amount of female labor available. All business is done at Dunnville.

Delaware, Wilmington. The Crown Knitting Mills, with Geo. A. and L. K. Robinson as proprietors, are arranging for the equipment of a plant for the manufacture of seamless hosiery for women at 611 West Front St. The initial equipment will consist of 20 latch needle knitters and 3 loopers. They will finish their own product and sell direct.

*Georgia, Villa Rica. Several months ago it was reported that J. T. Fuller would establish a small knitting mill. While nothing has been done toward establishing a plant the project has not been dropped and in about two months Mr. Fuller expects to begin manufacturing half hose under the name of the Fuller Knitting Mill about one mile from Villa Rica. Manufacturing will be started on a small scale and the plant will be enlarged later if the business warrants it.

*Michigan, Grand Rapids. The new Grand Rapids Hosiery Co. will begin manufacturing men's and women's seamless hosiery about January 1 with 25 machines. The corporation has organized with E. A. Clements, president; John Snitsller, treasurer, and M. T. Murphy, superintendent and buyer. The plant will be equipped with a dye house and the product sold direct. As noted in an earlier report, the new company will at first lease space for manufacturing, but later intends to build a mill especially adapted for hosiery manufacturing.

New York, New York City. The Wm. H. Spanswick Mfg. Co. has been incorporated with capital stock of $40,000 to manufacture clothing and hosiery. Wm. H. Spanswick, president of the Monarch Knitting Mills and the Progress Knitting Mills Co. of Fulton, N. Y., is one of the incorporators and associated with him are Frank E. Fairchild of Philadelphia and C. A. Larned of Phoenix.

*New York, Oswego. James A. Shufelt and Catharine Shufelt, the persons interested in the new underwear mill project, have purchased the Campbell greenhouse property and next April will begin the construction of a mill. They expect to complete the building and equip it ready for manufacturing men's union suits by September, 1911. It is proposed to operate the machinery by electric power. A corporation will be formed with capital stock of $40,000, of which Mr. Shufelt will be president and treasurer. Further details have not been worked out and it will be several weeks before particulars of the machinery equipment will be known. Mr. Shufelt has had a number of years experience as a knit goods manufacturer and held positions as superintendent in the Swits Conde Mill and in the plant of Frederick Conde.

*North Carolina, Cooleemee. The North Cooleemee Hosiery Co. is installing machinery in the new building recently completed. This concern was incorporated last April with capital stock of $25,000. J. M. Greenfield of Kernersville is secretary and treasurer of the company.

*Pennsylvania, Easton. The Easton Knitting Mills Co. have started up a small part of the machinery and other machines are being put in condition for operations as rapidly as possible. It is expected by the first of January the plant will be in full operation.

*Pennsylvania, Hazleton. The new building for the Hazleton Hosiery Company has been completed but it is not known when it will be equipped and started up or what class of goods will be manufactured. T. A. Williams is the treasurer, the company being capitalized at $25,000.

Washington, Seattle. The Seattle Knit Goods Co., reported proposed several months ago, is located at 326 West 83d St. The business will be incorporated after January 1 to manufacture underwear, fancy knit goods, sweaters, bathing suits, etc. Otto C. Krause will be president, treasurer and buyer.

Wisconsin, Appleton. Herman Venth, superintendent of the Northland Knitting Co. of Minneapolis, Minn., for a number of years, will start a knitting plant in Appleton, beginning manufacturing April 1, 1911.

Enlargements and Improvements.

Georgia, Barnesville. The new bleachery of the Gem Knitting Mills has been completed and the company expects to increase the capacity of the Mill about 40 per cent. in the next few months. Women's cotton knit underwear is manufactured.

*Georgia, Rome. Sixty new knitting machines are being installed in the Cherokee Hosiery Mills and they will have a total of 145 knitting machines and 6 sewing machines in operation by January 1. A press has been added to the finishing department. They manufacture ladies' fine gauge mercerized and lisle hose, also children's and misses' goods. E. F. Shropshire is president and F. C. Bivings is superintendent. These men attend to the buying and Mr. Bivings can be reached at all times at the plant. Mr. Shropshire calls on the jobbing trade.

*Illinois, Belleville. The new plant of the Belleville Hosiery Mills will be ready for operation December 15 and will give them an output of 300 dozen of 220-needle mercerized half hose per day. They will do their own dyeing and have erected and installed a dye house with the most up-to-date equipment, especially for mercerized dyeing, and can supply goods in any shade wanted.

*Illinois, Chester. Following the increase in the capital stock of the Chester Knitting Mills from $40,000 to $100,000, recently noted, the company has taken over the mills at Sparta and Pickneyville of J. H. Rickman and will operate them in the future as branches of the Chester Knitting Mills. This will give production of 1,500 dozens per day. They have just completed a new brick dye house, 60 by 70 ft., and an addition to the finishing department, 60 by 80 ft. A new 3-story mill, 80 by 120 ft., is under construction at the present time and will be used for knitting and finishing on its completion early in 1911. An increase in the power plant is being made and they are installing an electric generator to be connected with the engine with a view to running the plant by electric power and making their own lights. Four new hosiery dryers of 500 dozens capacity each are being added to the finishing equipment and they are also installing a filtering system.

*Illinois, Chicago. Twenty to 30 new knitting machines will be installed in the addition being constructed for the Lorenz Knit Goods Mfg. Co. on Belmont Ave. They manufacture sweaters, sweater coats, underwear and fancy knit goods. Richard Lorenz is superintendent and buyer.

*Massachusttts, Great Barrington. There will be no increase in the plant of the Reliable Knitting Co. They are making some changes in machines in order to produce finer goods and to make the equipment more up to date. Walter J. Roberts is general manager.

Minnesota, Bemidji. John Plumer, manufacturer of lumbermen's socks and similar goods, will install one or two more machines before long. Three knitting machines and two ribbers are operated.

New York, Brooklyn. The Bedford Knitting Mills, manufacturers of sweater coats at 105 Broadway, will add a line of bathing suits.

*New York, Illion. While the erection of an addition is being considered by the Sterling Mills, as noted in an earlier report, it is not likely that they will begin construction work before next summer.

New York, Troy. The Rob Roy Hosiery Co. has just completed the remodeling of its offices.

New York, Valatie. As noted previously, the J. M. Lyon Mfg. Co. of Northville, N. Y., will remove to Valatie. They have leased a building for three years and are installing their equipment. Operations will be started by December 15.

New York, Whitesboro. Twelve knitting machines of the most up to date model have been installed in the Anchor Knitting Mills, Robert Ablett, proprietor. The machines were built by Robt. W. Gormly & Co., manufacturers of spring needle knitting machines, Troy, N. Y.

*North Carolina, Littleton. The controlling interest in the Littleton Hosiery Mills has been purchased by the Enfield Hosiery Mills Co. of Rocky Mount, N. C. George T. Andrews is general manager of the Rocky Mount and Enfield mills and will also be general manager of the Littleton Hosiery Mills. John Walton, Sr., formerly of Philadelphia, is superintendent of the Littleton Mills. They will put in 30 more 176-needle machines and make ladies' ribbed top goods in the plain and fleece.

*North Carolina, Winston-Salem. Everything will be in readiness to begin manufacturing the first week in January in the new cotton yarn plant of the P. H. Hanes Knitting Co. The main building of the yarn department is 127 by 452 ft. Three warehouses, 50 by 100 ft. each have been erected and 37 cottages for operatives. The machinery equipment includes 10,000 spindles and preparatory machines. The plant is located in the new town of Hanes, about three miles from Winston-Salem.

*Ohio, Cleveland. The new mill under construction for the Green-Haas-Schwartz Co. is expected to be finished and equipped by February 1. Good progress is being made.

Pennsylvania, Allentown. Twenty additional knitting machines will be installed in the plant of the Sorosis Silk Co. for the manufacture of women's high grade silk hosiery some time during the coming year. The capital stock of the company is $25,000. Joseph S. Mack is president; C. J. Ross, secretary and treasurer, and G. C. Halk, superintendent. 220-needle silk half hose is manufactured on 25 knitting machines and finished at the present time.

Pennsylvania, Lehighton. New machinery has been ordered by the Carbon Knitting Co. and will be installed as soon as delivered. Women's and children's flat underwear and union suits are manufactured. E. M. Phifer has been elected treasurer. Walter Drumheller is superintendent and manager.

Pennsylvania, New Cumberland. The Pennsylvania Underwear Co., manufacturers of Swiss ribbed cotton underwear for women, are very busy. New knitting and sewing machines have been added to enable them to keep up with their orders. Geo. A. Kauffman is superintendent and production is sold direct and through agents.

Pennsylvania, Philadelphia. The Ideal Hosiery Mills, of which Jones and Page are the proprietors, now located in the Lomax Building, Jasper and York Sts., report that they are very busy. Another floor is to be added and equipped with machinery to enable them to keep up with orders on their goods, which consists of 200 and 200-needle women's, misses' and infants' cotton seamless hosiery. Their present equipment will be increased to 26 ribbers, 15 loopers and 125 knitting machines. The production of the plant is sold through New York. They are buying cotton, mercerized, worsted and silk yarns.

Pennsylvania, Siegfried. It is probable the Atlas Hosiery Mills, successors to Young's Hosiery Mill, will be incorporated during 1911. If this is done new knitting machinery will be installed and a dyeing department added. O. W. Brisker is proprietor.

Dyeing, Bleaching, Printing, Etc.

THE AFFINITY OF DYESTUFFS FOR WOOL.

BY HOWELL.

Wool has a greater affinity for dyestuffs than has any other textile material. Being an animal fiber it combines directly with acid, basic and substantive colors. The active constituent in wool which is supposed to take part in the dyeing process is "keratine," and this is apparently a very reactive chemical body. The wool fiber is a colloidal substance, and no doubt forms with most coloring matters a "solid solution." Its chemical composition, however, apparently plays an important role in the application of certain classes of dyestuffs, such as the acid and basic dyes. The affinity of wool for most dyes is much greater at a boiling temperature than in the cold; hence the dyeing of wool nearly always takes place in a solution at or near the boiling point. This condition, however, will depend somewhat on the character of the dyestuff employed; the phthalein dyes, for instance (including the eosins and rhodamines) are usually applied at a temperature of about 140° to 150° F., and many acid dyes at a temperature of 180° to 190° F.; whereas the most of the mordant dyes require the bath to be at the boiling temperature for their proper fixation.

Many of the basic dyes, on the other hand, will combine rather easily with wool even in cold baths. Some dyers consider that it is necessary to boil the wool hard in order to dye it perfectly. With but few exceptions, however, this does not appear to be generally necessary. Most dyes belonging to the acid, basic, and substantive classes require a temperature only up to about 195° F., and even some of the mordant dyes may be satisfactorily dyed at this temperature. It may also be remarked in this connection that fine woolen and worsted yarns of such a character as to be easily felted and tangled, should never be vigorously boiled in the dyeing.

Dyes having a strong affinity for the wool fiber are absorbed easily and quickly from the bath. Dyes having but a weak affinity for wool "exhaust" but poorly, and the bath retains the larger portion of the dyestuff after the dyeing. Such dyes, however, can often be more thoroughly exhausted by a longer heating in the bath, or by the addition of more Glauber's salt or common salt, or of other assistants such as sulphuric acid, acetic acid, etc., or in certain cases by a previous mordanting of the wool.

Dyes which exhaust too rapidly often give rise to uneven dyeing, especially if the bath is heated at all unevenly. This will be particularly true if the dyestuff solution is added to the hot bath containing the wool. Probably the greater number of dyestuffs show a tendency to come up unevenly in some degree, while the smaller number are of a very level dyeing nature. Such dyes are not confined to any one class, but extend through all the different groups of dyestuffs. Uneven dyeings, however, may result from a variety of causes. In the manufacture of woolen materials, wools of different quality and origin are mixed together, and it will often happen that one kind of wool will have a greater attraction for the coloring-matter than another, hence will dye up a darker color; or sometimes, one kind of wool will take one shade, and another kind of wool a slightly different shade; hence, the dyed color may appear uneven from this cause. For the dyeing of wool it is desirable to use as soft water as possible, though this is not so necessary as in the case of dyeing silk, where it is customary to employ soap as an addition to the dye bath. That the lime in hard water has a certain influence in dyeing is without doubt, although this effect is more or less neutralized by the presence of sulphuric or acetic acid in the dye bath.

At the present time the silk dyers alone employ the natural dyes to any extent; for most purposes wool is now dyed with the acid colors, though for very fast shades the mordant dyes are used. The basic dyes play

but a minor part in wool dyeing; though a few, such as Magenta, Rhodamine and Victoria Blue are still used in quite large amounts for the production of certain special shades. The substantive dyes are not so much employed for wool, though their use in this connection seems to be increasing, as their wool-dyeing properties become more thoroughly understood and exploited. Many of these latter dyes give faster colors on wool than can be obtained with either the acid or basic dyes.

That the affinity of wool for dyestuffs is conditioned by the chemical reactivity of the fiber is unquestioned. As is well known, wool has the power of combining with acid substances to a marked degree, evidently forming a stable chemical compound. The stronger the acid character of the substance, the stronger is its reaction with wool. It is due to this fact that wool dyes so readily with the general class of acid coloring matters, and this also explains why its compounds with certain of the acid dyes are more stable than with others.

The wool fiber has a duel chemical nature. Not only has it the power of combining directly and readily with acid substances, but it also has the power of combining in an apparently chemical manner with substances of a basic character. Although this may appear to be strange and even contradictory, it is due to the fact that wool belongs to that class of organic bodies which contain in their inner constitution chemically active groups of both an acid and basic nature, but so arranged in the internal structure of the body that the two groups cannot mutually neutralize one another. They may, however, be neutralized by combination with outside substances of an opposite chemical character. This peculiarity of structure accounts for the property of the wool fiber being able to combine directly with both acid and basic dyestuffs.

The combination of wool with the basic dyes, however, does not seem to be as stable as that with the acid dyes, as is shown by the lack of fastness of the basic dyes on this fiber. Reference is here had to the fastness to washing, for with regard to fastness to light, or other chemical agencies, the stability of a color is conditioned on other factors than the affinity for the fiber. The weaker combination of basic substances with wool is also shown by the direct reaction of this fiber with acids and alkalies. Wool will combine readily with acids, such as dilute sulphuric acid, without any apparent decomposition of the fiber substance. With alkalies, however, wool does not combine so readily in the same direct manner. From exact observations, it has been found that the substance of the wool fiber does combine in a weak and unsatisfactory manner with dilute alkali, such as caustic soda, but under the more severe action of the alkali, the wool fiber is decomposed. The difference in the two cases is very clearly shown by the fact that wool may be boiled for a long time in a dilute solution of sulphuric acid without any apparent change in its fiber structure, but if boiled in even a more dilute solution of caustic soda, the fiber is rapidly disintegrated.

The method of applying a large number of so-called "mordant" dyes to wool is based on the property which wool possesses of combining readily with certain metallic oxides, known as mordants. A certain number of metals have this property more pronounced. Among these may be mentioned chromium, aluminium, iron, copper, tin, titanium and nickel. The exact nature of the combination of the fiber with the metallic salt is not positively understood, but no doubt the chemical reactivity of the wool substance controls to a considerable degree the mode of combination. While the fiber itself does not possess the power of combining directly with these mordant dyes, the new compound of the fiber with the metallic salt does possess this property to a marked degree, with the formation of very stable colored compounds known as "lakes." From a consideration of the chemical nature of the mordant dyes and also the nature of the mordant combination on the fiber, it is certain that there is more or less of a chemical union between the dyestuff and the mordant. This is also evidenced by the fact that most of these color lakes may be prepared

directly by the interaction of the solution of the metallic salt with the dyestuff without any reference to the presence of the fiber at all.

The affinity of the natural dyestuffs for wool is based upon the same general principles as in the case of the coal tar dyes. The majority of the natural dyes belong to the mordant class, though a few will combine with wool directly after the manner of acid dyes, and a limited number act in the same manner as substantive dyes. As nearly all of these coloring matters, however, are now practically obsolete, their chemical behavior with wool has only an academic interest. The coloring principle of logwood behaves after the manner of a mordant dyestuff, and is applied in conjunction with certain metallic mordants.

PADDED VERSUS JIG DYED COTTON PIECE GOODS.

BY JOHN D. STREET.

While thousands of pieces of light shades or so-called tints are being padded daily, a dryer usually does not take kindly to it, except for very light work or on such work as cannot stand much expense. With the two-roll padder and single passage through the squeeze rolls, the dye has but little chance of penetrating the fabric. Especially is this true on twills or closely woven piece goods, so the good old stand-by, the jig, with all its uneconomical handling, retains its popularity and will for many years continue to be in use on certain heavy or dark shades with mordanted bottoms which require that peculiar chemical action of steaming and dyeing while

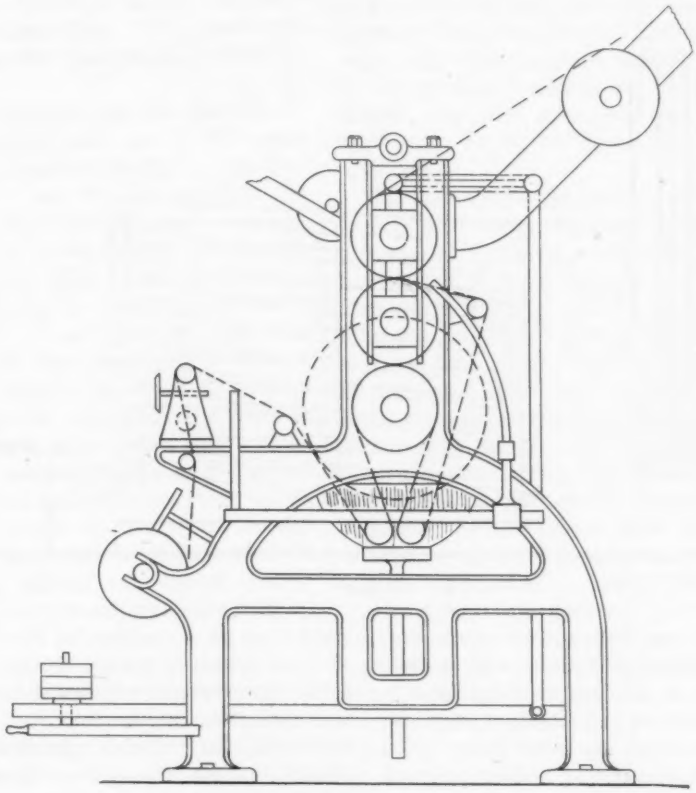


FIG. 1. SHOWING THE PASSAGE OF THE CLOTH THROUGH THE DYE LIQUOR.

the dye is being squeezed in by the successive laps of cloth.

With the advent of substantive or self colors, the anilines present a beautiful range of light and medium shades, easily dyed, going on rapidly and evenly, especially when padding on mercerized cloth.

The question always present is when to pad and when to jig. Greater latitude could

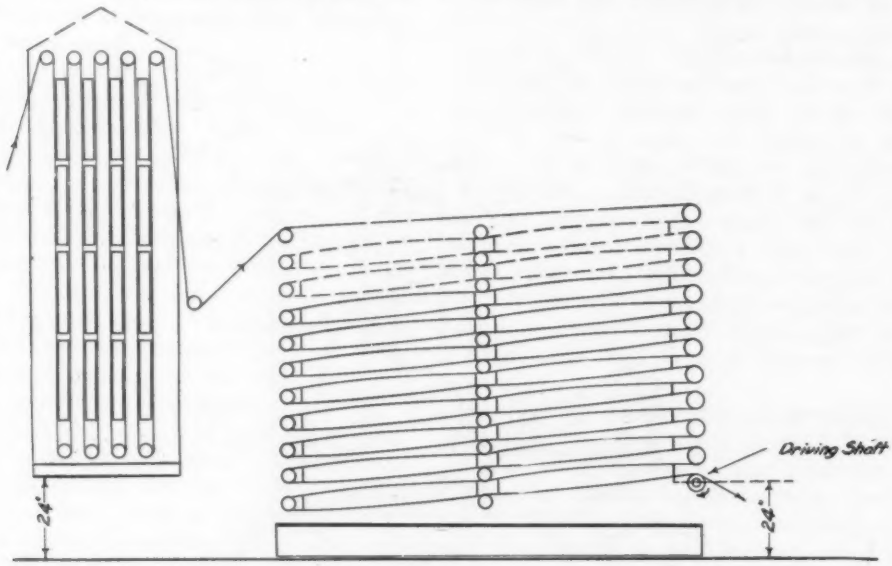


FIG. 2

be given if the two-roll padder were discarded and a three-roll padder with a suitably arranged box for longer immersion is used. A very popular construction used extensively in Europe is the usual three rolls, either all rubber covered or rubber covered and metal, set in the ordinary framework, fitted up with lever weights and cams for quickly raising the top or middle roll. The dye or padder box is deeper than the one in general use and contains two guide rolls. The fabric takes its downward course through the liquor, passes under the first guide roll, then through the first nip, then into the liquor again and under the second guide roll, and from there into the second nip and over the top roll, as shown at Fig. 1.

The cloth is much longer in the liquor than by the old way. The first squeeze sends the liquor into the interstices of the fabric, while the second squeeze distributes the dye evenly over the face and back. It is safe to assume that it is more than equal to two ordinary paddings. Care, however, is given to the feeding-in of the dye liquor which should always be in front or where the cloth comes in for its second immersion. The dyed fabric is then either plaited down on a truck or guided on to a mechanical dryer. Trucking of dyed goods is always wrong. The upper folds and servages will dry out, the moisture will drain to the bottom folds, sometimes staining, but always producing uneven shades, so the drying should be done in a continuous operation. Now all will admit that the drying of dyed goods either in the open air or in a large steam heated chamber is the best, but unfortunately impractical when cost and production are considered. If the goods are guided directly to a mechanical dryer, the so-called "hard-drying" follows. Evaporation takes place so quickly as to leave the dye on the surface which tends to crocking, to say nothing of the saddening effect. To overcome these troubles the foreign dyer uses a "hot flue," a small chamber similar to an aniline ager in which

the cloth is made to travel up and down over positively driven carrier rolls (to prevent too great a pull lengthwise of the cloth), the drying being performed either by hot air forced in from below or by steam chests. These are suspended to the framework and the cloth is made to travel very close, but without touching the heated metal. Evaporation and drying take place slowly. The steam vapor thus thrown out creates a similar chemical action as in the steam box. The colors are oxidized and a greater fastness and bloom is the result.

For a large production the hot flue can be made of any required size, but it has been recognized that a partial drying in the hot flue is sufficient to set the dye and that the final drying can be obtained more economically by contact without danger to the dye or change in shade. This of course is much quicker than drying by radiation entirely. The range, as shown at Fig. 2, consists of a hot flue and a cell drier arranged in such a manner that the side of the cloth coming in contact with the cells is always the reverse side of the fabric, a most important feature in the finishing of twills, lappets, or figured cottons, as the heat applied to the reverse side will always throw up the figure on the face. The first installation of this kind in the States is, we believe, now being erected at the Fall River Bleachery, Fall River, Mass.

There are 35 cotton mills in Greece, equipped with 99,300 spindles and 1,211 looms, and representing a capital of $3,800,000. Employment is given to about 5,000 hands. The total annual product is valued at $2,088,000.

The imports declared at Manchester, England, for the United States and the Philippines during the month of October, 1910, amounted to $1,556,940, a decrease of $105,406 from those declared in October, 1909. The following show the principal decreases and wherein they occurred: Machinery, $143,930; cotton piece goods, $57,333. An increase of $82,351 occurred in cotton velvets, fustians, etc.

AN IMPROVED PROCESS OF INDIGO DYEING FOR PIECE GOODS.

The present method of dyeing indigo has undergone no change of any importance for many years, the process being practically the same as conducted since the discovery of the property of being able to produce upon fabrics shades of different degrees of intensity by frequent passages of the fabric through vats containing the coloring matter in a reduced or leuco condition. The frequent passages with intermediate oxidation resulting in the gradual building up of the coloring matter, one film upon another as it were, until the requisite depth of shade was obtained.

The final result possessed certain inherent defects and the subsequent washing in the process of finishing entailed a considerable diminution of the color lake upon the fabric. This effect was intensified when the garment was subjected to washing and wear. Portions of the fabric which encountered friction resulted in a further loss through crocking. As a result the rich bloomy tone of the color which has proved its source of attraction, no other color being equal to it, has suffered somewhat in the estimation of consumers. Efforts which have been made to overcome these defects have not been altogether successful. Apart, however, from these defects the present process necessitates considerable expenditure in the necessary plans for conducting the dyeing operations, and also requires a large capital in the maintenance of huge vats containing the coloring matter in a reduced condition, ready at all times to meet the demands made upon them. The vats containing the color are subject to constant change of conditions and when it unfortunately happens that the vats remain unused for some time the loss of dyeing power is considerable by reason of the change which takes place in the constitution of the sensitive organized body which the vats are charged with. The recent discovery of penetration reducing agents such as Reductite has permitted the introduction of a novel and rapid process of indigo dyeing which does not carry the various disadvan-

tages above mentioned and permits of a more economical production of shades of different degrees of density than has hitherto been possible.

The color is also faster to washing and crocks much less than by the ordinary methods of dyeing. Another advantage is that shades of a constant degree of regularity can be obtained. These results are obtained in a novel yet simple manner by the use of a continuous system of dyeing in a concentrated bath of reduced indigo which is arranged in such a manner that there is no surface oxidation of the reduced indigo and a complete saturation of the fabric is secured with the amount of the coloring matter regulated to produce shades of equal degree of intensity according to the desires of the producer. The machine consists of an air tight box furnished with suitable carrying rollers immersed in the reduced indigo or vat color, which is set with a definite proportion of reduced coloring matter, the latter being fed into the box beneath the surface of the liquor to make up for the loss of the liquor taken out of the box by the fabric. At the entrance end of the box a couple of rollers are placed, one of them flexible to expel the air being carried by the interstices of the cloth and which work at the level of the reduced coloring matter. This device secures the absolute minimum of color oxidation in the bath itself and helps to secure the immediate partial saturation of the fabric.

The further passage through the bath over the carrying rollers completes the final saturation of the fibers of the fabric, which is thoroughly equalized by the parallel nipping rollers which are not superimposed at the exit. The superfluous color is expressed and falls back into the box without oxidation. Oxidation is prevented by having a layer of kerosene upon the surface of the bath parallel to the axis of the nipping rollers. The fabric being saturated with the reduced color, repels the kerosene, none of which enters the fabric. The cloth passes forward and the color oxidizes evenly upon the fabric free from stains. The complete oxidation is secured by the passage through a weak oxidation bath of bichromate. The usual operation of washing follows. It is found, however, that the washing need not be as long as with the ordinary process, there being a better amalgamation of coloring matter and fiber. This new type of dyeing machine has been invented and patented by A. Ashworth, of England. Danker & Marston, 247 Atlantic Ave., Boston, are the American agents, and will be pleased to furnish interested parties with particulars of this important new departure in efficient vat dyeing.

THE PSARSKI DYEING MACHINE.

The widespread interest aroused in this machine on account of the practical and published results of its work on various kinds of fabric has led to some comparison of its work with others of somewhat similar type, without a full appreciation of the peculiar features of this machine, so that a brief description of the working of the machine may be of some interest at this time.

The dye kettle proper is made of heavy pine, and cylindrical in shape, securely bolted to a heavy cast iron top and bottom. Fitting into this kettle is an iron or bronze false bottom, constructed with a central cone-shaped portion, supplied with a number of perforations, so as to permit thorough distribution of the dye liquor.

A removable cover, also of iron or bronze, and supplied with few and very small perforations near the periphery, fits closely to the inside of the kettle and is securely held in position by a central spindle, which serves as a bolt, and side clamps to hold the false bottom and cover together.

A rotary pump is attached to the kettle, and by suitable pipes and valves the dye liquor is made to circulate through the mass of material to be dyed, and when the dyeing is completed, to force the spent dye liquor back into the stock tank to be replenished. The pump also serves to force the rinsing water through the machine.

To commence dyeing, the false bottom is lowered into its place and the material to be dyed carefully packed around the central perforated cone, or distributor, after which

the cover is placed in position and tightly clamped down. The dye solution is then allowed to flow in from the dye tank, the pump put in motion and the circulation continued until the dyeing is completed.

The temperature is maintained or regulated by means of a closed steam coil in the machine, in the space immediately under the false bottom.

After dyeing the dye liquor is withdrawn by the pump and forced into the stock tank, and the water is circulated and continued until the washing is completed, after which the chemical solutions are circulated as in the case of diazotizing and developing. When the final washing is completed the cover is removed and by means of an overhead block and chain the false bottom is removed, carrying the dyed material, the whole being lowered in a whizzer.

One of the advantages of this machine is the very small volume of dye liquor in use, there being but 250 gallons of liquor for 500 lbs. of material to be dyed, or in the proportion of 1 to 4.15 by weight. Owing to this small volume the circulation is very rapid, the entire quantity being circulated about twice per minute.

One of the important points noticed in making dyeings with this machine is the automatic prevention of channels in the stock during the dyeing, and which is due to the constant upward and outward flow and pressure of the dye liquor. The pressure of the dye liquor may be as high as 25 pounds per square inch, and where so high a pressure is secured there seems to be no possibility of channels and consequently no uneven shades.

This question of "channeling" is a feature that has been brought up in discussing the merits of the Psarski machine, because this difficulty has been one of the most serious obstacles in machines on the circulating principle.

Mr. Jan T. Psa ' i, the inventor of the Psarski machine, points out some of the features of his machine in comparison with others as follows:

"It is not my intention to criticise any dyeing machine or apparatus. I will only explain the different ideas and principles of the machines which have been compared with the Psarski.

"The Obermaier apparatus is a single circulating machine, distributing the dye liquor from the center, through the material, and the perforated walls of the apparatus. The material being packed in the apparatus, dry or wet, is next compressed with the lid, and the dyeing operation is started. Every practical dyer or colors is acquainted with the fact that materials when brought up to the boiling point, or heated, shrink, and in shrinking will shrink to the center, which means the entire batch in the machine will shrink from top and bottom to the center, and in these two particular places will offer less resistance to the flow of the dye liquor, and the more compression there is inside of the apparatus, the quicker the two weak points will split into channels.

"Now we will take up the question of cooling down the batch of material that is in the apparatus. So long as the material is under the action of the heat the pores are open, but the minute that cold water enters the apparatus the material starts to become very compact, the pores being closed, and offers a great resistance to the rinsing water, and what follows. The top and bottom being the weak points, and already channeling, the cold water will convert the channels into the open spaces through which the water flows without penetrating the material, and this is why hosiery dyed with Sulphur Black is tender. The fiber is simply destroyed in time by the action of sodium sulphide that was not washed out of the goods. The Obermaier apparatus, having distribution of the dye liquor one way, from the center to the sides, can be called an 'apparatus with single flow of dye liquor from center to sides by pressure or from the sides to the center by suction.'

"In the Vacuum machine, with which the Psarski has also been compared, the material is placed between the perforated top and bottom, having the flow directed through the perforations, and the material between them.

"It is a machine, like the Obermaier, with single circulation, and the same remarks apply as to channeling, because the material, being treated with cold and hot liquor, shrinks from the sides to the center, leaving spaces between the material and walls of the machine, spaces free for circulating the rinsing water or dye liquor used in subsequent treatments, as, for example, Alizarine colors on wool, and developed or sulphur colors on cotton.

"Channeling, being parallel to the flow of the dye liquor, and being nothing else but the result of shrinking of the material, cannot," says Mr. Psarski, "be stopped by any means except the flow combined with compression in opposite directions.

"Material that is packed in the Psarski apparatus shrinks by the first action of the dye liquor, but is forced by the compression of the pump, from the center against the walls of the machine and is compressed from the bottom against the cover. In other words, the whole mass of material is compressed against the perforated outlet openings in the cover of the machine, and must be penetrated uniformly before the dye liquor escapes from the apparatus, also stopping every chance of channeling. Even more, if channels are formed in the machine by excess steam, or from thick dye liquor, they will be stopped in a few minutes, owing to the compression against the walls and cover.

"We sell our large size machine as 500 to 600 lbs. capacity. Our customers have so far done 900 lbs. of worsted tops in one batch. We sell our next size machine as 250 to 300 lbs. capacity. 375 to 400 lbs. of hosiery has been dyed in a single batch. We advertise our machine for top dyeing which we do very successfully. The fiber is not matted or felted, and does not need recombing. It also saves a great amount of labor, steam and dyestuff.

"The same thing applies to hosiery. The hosiery is placed in the machine without singeing, in bundles of one to five dozen, in the same condition as they come from the knitting room. The batch is dyed, diazotized, developed and softened, and goes straight to the finishing room, avoiding sorting. Besides this, the hosiery is not ruffled or roughed up, and has no nap on it, therefore needs no singeing, which means a saving of 40 cents to the hundred. In other words, hosiery after coming out of the Psarski dyeing machine, is in as good condition as when it comes from the knitting machine."

There are many of the Psarski machines in successful operation today and those who are interested in ascertaining the real facts may easily ascertain them not only from the builders but from the users.

THE FELTING AND SHRINKING OF FABRICS.

By LOUIS J. MATOS, Textile Chemist.

To understand and appreciate the importance of shrinking and felting of woolen fabrics, and the consequent results as shown by a soft and perfectly finished piece of goods, requires that the operator through whose hands the cloth passes should have an acquaintance with the structure and properties of the wool fiber. Not only should the operator understand the nature of wool, but should know and understand the reason why any particular process is used in treating the wool or cloth, for it is a well known fact that in many mills prices of cloth are badly finished in a vain attempt to correct and overcome some error or oversight committed, and which might have been avoided had a moment's thought been given to the job in hand.

Wool is a peculiar fiber, and within certain limits will show marked resisting qualities, but when certain of its limits are even slightly exceeded it suffers correspondingly, and of course loses in value, for that reason, in manufacturing medium to good grades of cloth, nothing should be overlooked that will tend to preserve all the good qualities of the wool used.

Defective scouring is responsible for more defects in cloth than any other cause, and this subject has been treated by the writer in this journal so often that it is unnecessary to discuss it again. Whatever the

method of scouring raw wool in use, free alkali and excessive temperature will do more to damage good stock in the shortest time than any other cause. Even a solution of 5 per cent. of carbonate of soda at 100° F. so destroys the fiber scales that subsequent felting is out of the question. As heat and moisture combined, in the presence of alkali will cause the fibers to interlock during the scouring, the real felting, which should be done in the fulling mill is impossible, and in the attempt to accomplish that result, the cloth is overworked, and usually in the presence of an excess of alkaline soap, which only tends to make matters worse. Consequently, scour with the least possible amount of soap and sal soda at the lowest working temperature, so as to leave the wool clean and lofty, thereby ensuring good carding and spinning.

If we examine a piece of well fulled or felted cloth under the microscope, we notice the fibers forming a tangled mass, and lying in all directions, the scales of opposite fibers driven into each other, the whole forming a compact tissue, and which is materially assisted by the natural curl of the wool. The so-called "set" of the fibers also plays an important part. If a small sliver of wool is taken and wet with warm water, and while wet is stretched so that the fibers are straight and parallel, and the whole allowed to dry while in that position, it will be found that the fibers have lost their natural curl, and have partially diminished in length. In making felted goods, the same condition exists, except that the fibers are not kept straight. The action of warm water, therefore, has an important action on the wool fiber, and must be given due regard in the felting process.

As heat is necessary for good fulling, the question arises, how high should we go? If we are fulling dyed material, the temperature should be kept at 85° to 90° F., while white cloth may be allowed to run at 100° to 110° F. In either case, keep the quantity of soap down to the correct amount, to be ascertained only by trials in the fulling mill, for the quality of wool used in the cloth.

(To be continued.)

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 1.

Blue on Worsted Yarn.

Anthra Cyanine R L on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Anthra Cyanine R L.
(Farbenfabriken Co., 117 Hudson St., N. Y.)
15 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for one hour.

Anthra Cyanine R L is easily soluble and penetrates well. It possesses very good fastness to light, and good fastness to alkalies, stoving and steaming, and is valuable for the dyeing of ladies' dress material.

Recipe No. 2

Scarlet on Cotton Yarn.

Naphtamine Fast Scarlet B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Naphtamine Fast Scarlet B.
(Kalle & Co., 530 Canal St., N. Y.)
30 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Naphtamine Fast Scarlet B for a direct cotton color possesses excellent fastness to light and acids.

Recipe No. 3.

Brown on Worsted Yarn.

Mercerol Brown W on 100 lbs. worsted yarn. Prepare the dye bath with

3½ lbs. Mercerol Brown B.
(Read Holliday & Sons, 11 Gold St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter the material and raise bath to a boil, dyeing at a gentle boil for 1/2 hour; steam is then shut off and 1 lb. sulphuric acid, largely diluted with water, is added and the dyeing continued for another 1/2 hour at a gentle boil. If the wool is on shade it is then washed off. If not on shade the bath should be cooled down, the requisite additions made, and the boiling con-

tinued another 1/2 hour.

Mercerol Brown W possesses very good fastness to light, milling, acids and decatising.

Recipe No. 4.

Yellow on Cotton Yarn.

Triazol Fast Yellow 2 G on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Triazol Fast Yellow 2 G.
(Geisenheimer & Co., 189 Front St., N. Y.)
5 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Triazol Fast Yellow 2 G possesses very good fastness to light, soaping, acids and alkalies.

Recipe No. 5.

Green on Cotton Yarn.

Nerole Green G G X on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Nerole Green G G X.
(Innis Speiden & Co., 46 Cliff St., N. Y.)
20 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Nerole Green G G X possesses very good fastness to light and acids.

Recipe No. 6.

Black on Woolen Cloth.

Azo Hematine Black on 100 lbs. woolen cloth. Prepare the dye bath with

6 lbs. Azo Hematine Black.
(F. E. Atteaux & Co., 174 Purchase St., Boston, Mass.)
20 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

Enter at 120° F., raise to boil in 15 to 20 minutes and dye at a boil for 1/2 hour. Exhaust with

2 lbs. Sulphuric Acid

and wash.

Azo Hematine Black produces a bloomy blue black of the much desired Logwood tone. It possesses good penetrating power, and is especially useful for felt hat work.

Recipe No. 7.

Blue on Worsted Yarn.

Fast Cyanine Blue on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Fast Cyanine Blue.
(F. E. Atteaux & Co., 174 Purchase St., Boston, Mass.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 120° F., and dye at boil for one hour.

Fast Cyanine Blue is a level dyeing color, and possesses very good fastness to light, alkalies, and rubbing.

Recipe No. 8.

Blue on Worsted Yarn.

Fast Chrome Blue R on 100 lbs. worsted yarn. Prepare the dye bath with

8 lbs. Fast Chrome Blue R.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Ammonium Acetate.
10 lbs. Glauber's Salt.

Enter at 120°, bring to a boil, and dye at a boil for 1/2 hour. Then add

5 lbs. Acetic Acid

and finally a little sulphuric acid, if necessary, to exhaust the dye bath. Then add

3 lbs. Potassium Bichromate,
2 lbs. Acetic Acid,

and boil for 1/2 hour.

Fast Chrome Blue R possesses excellent fastness to light, scouring and fulling.

Recipe No. 9.

Blue on Cotton Yarn.

Tetrazo Fast Blue 2 B L on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Tetrazo Fast Blue 2 B L.
(American Dyewood Co., 115 High St., Boston, Mass.)
30 lbs. Common Salt.

Enter just below the boil and dye at a boil for one hour.

Tetrazo Fast Blue 2 B L possesses very good fastness to light.

Recipe No. 10.

Yellow on Worsted Yarn.

Mercerol Yellow G on 100 lbs. worsted yarn. Prepare the dye bath with

3½ lbs. Mercerol Yellow G.
(Read Holliday & Sons, 11 Gold St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter the material and raise the bath to a boil, dyeing at a gentle boil for 1/2 hour; steam is then shut off and 1 lb. sulphuric acid, largely diluted with water, is added and the dyeing con-

tinued for another 1/2 hour at a gentle boil. If the wool is on shade it is then washed off. If not on shade the bath should be cooled down, the requisite additions made, and the boiling continued another 1/2 hour.

Mercerol Yellow G possesses very good fastness to light and milling.

Recipe No. 11.

Blue on Worsted Yarn.

Fast Marine Blue B B T on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Fast Marine Blue B B T.
(Badische Co., 128 Duane St., N. Y.)
3½ lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 140° F., and dye at a boil for one hour.

Fast Marine Blue B B T will be found useful for general wool dyeing purposes. Its fastness in most respects is good, and it can be recommended for the dyeing of ladies' woolen dress goods.

Recipe No. 12.

Brown on Worsted Yarn.

Fast Chrome Brown R R on 100 lbs. worsted yarn. First mordant the yarn with

3 lbs. Potassium Bichromate.
2 lbs. Tartar.

Enter at 120° F., bring to a boil and mordant at a boil for 1 1/2 hours. Rinse, and then dye in a bath made up with

6 lbs. Fast Chrome Brown R R.
(C. Bischoff & Co., 451 Washington St., N. Y.)
1 lb. Acetic Acid.

entering at 120° F., and dyeing at a boil for 1 1/2 hours.

Fast Chrome Brown R R possesses excellent fastness to light, scouring and fulling.

Recipe No. 13.

Brown on Cotton Yarn.

Tetrazo Chlorine Brown R Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Tetrazo Chlorine Brown R Conc.
(American Dyewood Co., 115 High St., Boston, Mass.)
30 lbs. Common Salt.

Enter just below the boil and dye at a boil for one hour.

Tetrazo Chlorine Brown R Conc. possesses very good fastness to light.

Recipe No. 14.

Brown on Worsted Yarn.

Anthracene Chrome Brown S W R Pat. on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Anthracene Chrome Brown S W R Pat.
(Cassella Color Co., 182 Front St., N. Y.)
3 lbs. Sulphuric Acid.

Enter at 120° F., and dye at a boil for one hour. Cool and add

2½ lbs. Potassium Bichromate

and boil for 3/4 of an hour longer.

Anthracene Chrome Brown S W R Pat. possesses very good fastness to light, washing, alkalies and steaming.

Recipe No. 15.

Yellow on Worsted Yarn.

Phenylene Fast Yellow 3 G on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Phenylene Fast Yellow 3 G.
(W. F. Sykes & Co., 85 Water St., N. Y.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for one hour.

Phenylene Fast Yellow 3 G possesses very good fastness to light and washing, and may be used to advantage with other colors of this type, for the production of compound shades.

Recipe No. 16.

Blue on Cotton Yarn.

Naphtogene Pure Blue 3 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Naphtogene Pure Blue 3 B.
(Berlin Aniline Works, 213 Water St., N. Y.)
2 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Dye for one hour at a temperature of 200° F., rinse and then diazotize in a cold bath made up with

3 lbs. Nitrite of Soda,
6 lbs. Sulphuric Acid, 168° Tw.,

and the necessary amount of water.

Rinse in cold water, and then enter into the bath which has been made up with the necessary amount of cold water to which has been added

1 lb. Beta Naphthol,

dissolved with

1 lb. Caustic Soda, 70° Tw.

Naphtogene Pure Blue 3 B possesses very good fastness to washing, and its fastness in other respects is good for a color of this class.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Dyeing Machine. Danker & Marston, 247 Atlantic Ave., Boston, Mass. A new method of dyeing cloth indigo blue. The apparatus for this process is the invention of A. Ashworth, of Lancashire, England. Danker & Marston are introducing it to the American trade. A description appears in this issue.

Automatic Hosiery Machine. The Hemphill Mfg. Co., Pawtucket, R. I., An improved split foot hosiery machine which is illustrated and described in another part of this issue.

Wool Oiling Apparatus. J. J. Marks, Lamprecht, Germany. An improved apparatus for oiling wool. The oil or emulsion is thrown on the wool in the form of a spray as the stock enters the picker.

Mixed Textile and Paper Yarn. Emil Claviez, Adorfi, Germany. A process of manufacturing yarn from a mixture of paper and textile fiber, the product being much more serviceable than the ordinary paper yarn.

Ribbon Weaving. A. Handschin, Basel, Switzerland. An improved method of weaving ribbons with double filling, to produce a smooth selvage.

Woolly Effect on Jute Fabrics. Gebrueder Uebel, Plauen, Germany. A method of imparting a woolly appearance to jute fabrics by successive treatments with caustic alkali and soap solutions.

Bobbins for Lace Machines. Schubert & Salzer, Chemnitz, Germany. An improved method of cross filling yarn on bobbins for the shuttles of lace machines.

Drawing Frame Attachment. Hans Honegger, Adorf, Germany. An attachment for drawing frames to prevent the sliver from becoming snarled when entering the machine.

Measuring Machine. The Allgemeine Maschinen & Apparate Gesellschaft, Zurich. Switzerland. A measuring device attached to the loom to indicate the length of each cut woven and the total length woven during any given period. It is locked so as to prevent its being tampered with.

Drawing-in Hook. Adam Limbaecher, Koengen, Germany. A double prong drawing-in hook which is intended to draw two threads into separate heddles and then through one dent in the reed at one operation.

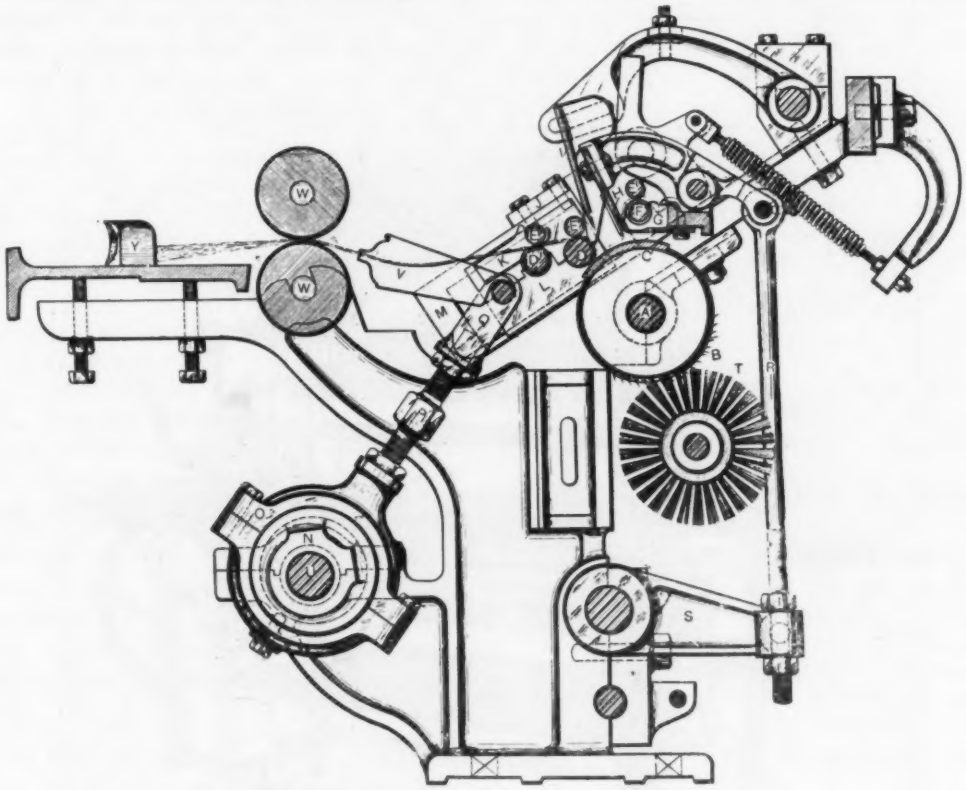
Mercerizing Process. Gustave de Keukelaere, Brussels. A process of mercerizing cotton garments either woven or knit.

Electrolytic Bleaching. E. Grether & Co., Blackfriars St., Manchester, England, are introducing into England the Oetel process of bleaching textiles by the electrolytic process. This process was developed in Germany by Dr. Oetel and its introduction into England has been hastened by the compulsory working clause of the English patent law. A complete electrolytic plant has been installed in Manchester by Grether & Co., and as a result several cotton and linen bleach works have ordered installations for their establishments.

Motor for Driving Looms. The Siemens-Schuckertwerke, Berlin, Germany. An electric motor designed for driving looms. It is set on springs and the belt is provided with an automatic take-up which ensures a uniform tension. The spring bed is for the purpose of taking up the vibration from the loom.

A NEW DETACHING MOTION FOR HEILMANN COMBERS.

This motion, which has been developed and adopted by Asa Lees & Co., Oldham, England, for whom William Firth & Co., 120 Franklin St., Boston, Mass., are the American agents, can be applied to any make of Heilmann comber. The improvement consists in applying two steel detaching rollers, D and D^1, with the corresponding leather-covered detaching roller, E. A reciprocating motion is given to these rollers by means of eccentrics, N, on the cam shaft. While rotating to detach the fibers projecting through the nippers, the rollers are moved towards the nippers, and are, therefore, able to continue detaching for a longer period than the rollers on the ordinary Heilmann system. In the latter case the leather detaching roller has to get up a surface speed equal to that of the cylinder before meeting the fluted segment to commence detaching, much of the forward movement being lost for productive purposes. In the new arrangement the fluted segment being dispensed with, the rollers commence detachment as soon as the forward movement begins, and during the continuance of that movement fibers are being constantly drawn from the lap. By this means, it is stated, the production of the comber can be doubled, as with the new detaching motion a lap weighing 28 dwt. per yard can be worked as successfully as a 14 dwt. lap on the ordinary Heilmann comber.

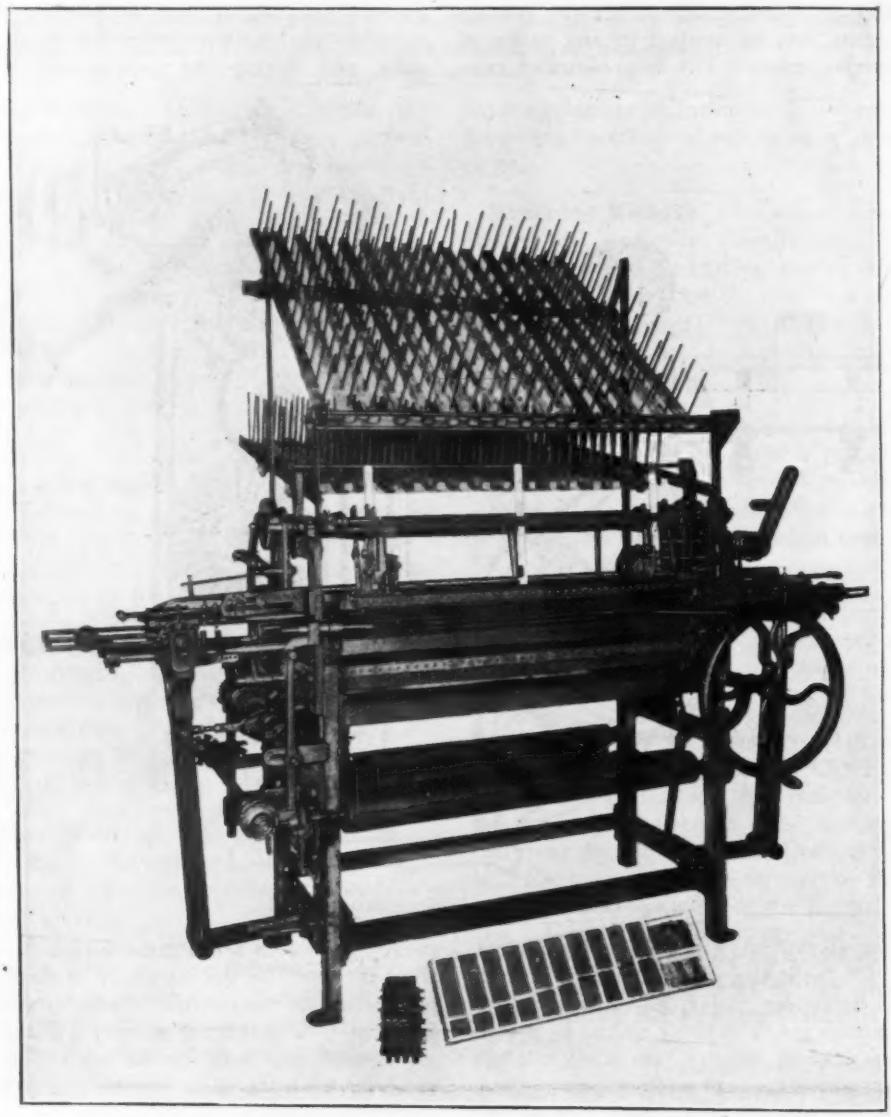


NEW DETACHING MOTION FOR HEILMANN COMBERS.

The imports of cotton into Havre, France, for 1909 were 1,151,253 bales of American cotton, 28,082 bales of Brazilian, and 20,113 of East Indian.

KNITTING MACHINE FOR DRESS TRIMMINGS.

The illustration shows a new machine built by the John Eppler's Machine Works, 629 Filbert St., Philadelphia, Pa., for the manufacture of millinery, dress and upholstery trimmings and net work. The builders, who have had long experience with this class of machinery, believe that it is unexcelled as regards production, low cost and variety of fine work, and state that it will produce goods which have not been able to be made before on machines built in the United States.



THE EPPLER KNITTING MACHINE FOR DRESS TRIMMINGS.

It has four horizontal sliding bars and two warp and two sling bars. The different designs on the horizontal sliding bar are controlled by a patented pin movement which secures accuracy in every detail, making it possible to produce close gauge work equal to that obtained on looms. The sling and warp bars are controlled by knuckles.

The demand for goods such as this machine is capable of producing at a satisfactory profit makes this machine of special interest at the present time.

The builders will be pleased to show the machine in operation and samples of the work to any one interested. The John Eppler's Machine Works also build a machine for finishing knit neckties, similar to ironing or pressing machines and crimpers for same.

THE LOXON LAMP GUARD.

The Loxon electric light guard shown in the accompanying illustration is manufactured by the McGill Mfg. Co., Valparaiso, Ind., and is rapidly winning its way because of the saving it effects by preventing breakage and the loss of lamps in other ways. The manufacturers inform us that they have found two sources of danger in using the incandescent lamps around textile mills. The hot filament from a broken globe may drop on the cloth and burn the goods. It has also been found that an unprotected lamp coming in contact with inflammable material sometimes causes a fire. Both of these dangers are obviated by the use of the Loxon guard.

The manager of a Philadelphia manufacturing company equipped his plant some time ago with the Loxon lamp guards and recently informed a representative of the McGill Mfg. Co. that the result had been a large reduction in the lamp loss. Formerly this plant had lost a large number of lamps by reason of their being stolen and the prevention of this loss, the manager stated, had more than paid for the guards since they were installed.

The McGill Mfg. Co. make several other styles with reflectors and shades that are especially useful for lighting textile mills. Their line also includes a portable guard. A free sample of the Loxon guard will be sent to users of electric lights who send an application under their own letter head. The

THE LOXON LAMP GUARD.

company have issued a catalogue in which their products are illustrated and described, and a copy of this will be sent on application.

A NEW YORK DISTRIBUTING CENTER FOR MANUFACTURERS.

Announcement was made some time ago that the Bush Terminal Company was preparing to put in operation the first union shipping establishment ever established in this country, and the plan will now receive a practical test by virtue of a lease recently made between the Bush Company and the Holeproof Hosiery Company, of Milwaukee. The stock of the latter will occupy 1,200 square feet in Union Shipping Building "A," at the foot of Fiftieth St., South Brooklyn.

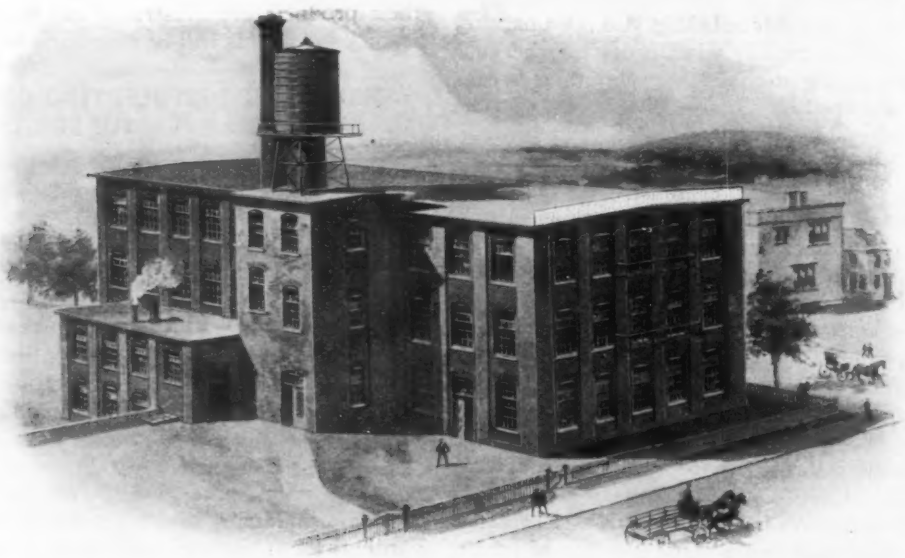
It is the plan of the Bush Terminal Company to relieve the tenants of its union shipping buildings of all responsibility regarding the shipping operations from the moment the goods are received in bulk, to the time that they are sent out in small lots to customers of the client. A trained shipping force has been engaged by the Bush Company and its duties will be assigned with the idea that one set of clerks can take charge of the receipts, orders and shipments

of one firm as easily as of those of a hundred. Tenants of these buildings will consider the Bush plant their own New York distributing center to which they will ship, from their various factory locations the entire output intended for eastern consumption. The Bush Terminal Company will fill all orders in the same manner as though the tenant had a wholesale room of his own with his own force of employes. In the case of the Milwaukee Hosiery Company, the finished product will be received at the new shipping room from that city, and all eastern customers will be supplied by the Bush Terminal Company.

WM. H. KNOWLES & CO.'S NEW REED WORKS.

On a recent visit to the new works of Wm. H. Knowles & Co., located at the corner of Myrtle and Pennimann Sts., New Bedford, Mass., our representative found this concern rushed to its utmost capacity. This company began the manufacture of loom reeds in March, 1910, and by July of the same year were compelled to double their capacity. The reputation for their goods was so high and the business increased to such proportions that they were obliged to look for more commodious quarters, and purchased the factory and grounds formerly occupied by the Cornell Stocking Co.

The property is practically new and in splendid condition. It consists of a three-story brick building, 75 by 45 ft., with a cement basement, engine and boiler room, elevator and all the necessary equipment for their business. The rooms are high-studded and well lighted. The plant is equipped throughout with electric lighting and automatic fire sprinklers. The engine is a 40 h. p. Corliss type. In the basement they are installing the most improved woodworking machinery, which will enable them to make their own reed ribs, as well as to supply the other reed manufacturers. The first floor contains the offices and counting rooms, and the machinery for reed setting and finishing. The second floor is devoted entirely to rolling and polishing wire. The third floor at



THE NEW REED WORKS OF WM. H. KNOWLES & COMPANY.

the present time is used as a stock room, but they have already under consideration the question of installing additional machinery, which they will be compelled to do in order to keep up with their orders.

The firm is composed of William H. Knowles and Harry Widmayer, Jr., the latter being the general manager of the company and well known in this line of work. The product of this company consists of reeds for silk, cotton and woolen weaving, slasher combs, striking combs, lease reeds and metal reeds of all descriptions. For the short time that this concern has been in business they have made a remarkable record for themselves, due to the high quality of their product. They have already on their books the accounts of many representative mills from all sections of the country and are taxed to their utmost capacity. They informed us that they intend to increase as rapidly as possible so that they will be able to guarantee prompt deliveries. They employ at present forty-five hands, but that number will be increased just as rapidly as new machinery is added.

A strong guarantee of the quality of their goods lies in the fact that a large proportion of their orders are repeat orders. Only the best stock is used in their reeds, which accounts for the superiority of product. We take pleasure in recommending users of these goods to communicate with the company at the above address, and they will be very glad to furnish prices and general information regarding their product.

The total value of raw cotton consumed in Russia in 1909 approximates $130,469,585.

It is estimated that the silk factories of Barcelona and Reus produce about $7,200,000 worth of silk goods annually. The number of looms engaged in silk weaving in this part of Spain is placed at 1,200.

The total value of the textile exports from Switzerland to the United States in 1910 amounted to $8,281,038 and $9,293,712 in 1909. The greatest decrease is in silk piece goods, amounting to $716,165.

MILL NEWS.

Iowa, Shenandoah. In January the capital stock of the Shenandoah Hosiery Mills will be increased and it is probable that some increase will be made in the capacity of the plant. J. J. Dunnegan is president and J. J. Reddy is vice-president and buyer.

Kentucky, Paducah. It is reported the plant of the Phillips-Lack Co. will be sold shortly to men who will put it in operation. The mill has been idle for several months.

Massachusetts, Lowell. At the meeting of the committee on reorganization held last week it was decided to recommend to stockholders of the Lowell Hosiery Co. that the capital be reduced to $50,000 and then increased by $75,000 by the issue of new stock. The matter will come before the stockholders in a few weeks.

*Massachusetts, Lowell. It is reported that the new mill project, for which the Locks & Canal Co. is trying to secure a site, refers to a large hosiery mill in which a prominent knitting machinery concern and a cotton and knit goods selling agent are interested.

Massachusetts, Malden. The Yale Knitting Co. has been incorporated with capital stock of $75,000 to manufacture knit goods. The incorporators are Joseph B. Jameison, 77 Summer St., Boston, president; Lester D. Marsh, treasurer of the Holmes Knitting Co., treasurer and clerk. The new corporation succeeds to the business of the Holmes Knitting Co., which is a Maine corporation. As noted a few weeks ago, a 3-story addition which will more than double the present capacity is planned and may be built in the spring.

Massachusetts, New Bedford. It is reported that Otto S. Pittle of this city has purchased the Mishaum Knitting Mill of Geo. C. Hatch, Jr., and his brother, Chas. Pittle, will be superintendent of manufacturing. At present only men's half hose is manufactured on 4 knitting machines, but it is stated a line of women's hosiery will be added.

New Jersey, New Brunswick. A new knitting industry will be started in the Herrman Building by Chas. and Samuel Herrman.

New York, Brooklyn. The Knit Goods Mfg Co. has been incorporated with capital stock of $80,000 by Rae Sheindelmann, 162 Vernon Ave.; Samuel Palley, 122 Pennsylvania Ave. and Wolf Natelson, 419 Franklin Ave., Brooklyn.

New York, Utica. An increase has been made in the capital stock of the Imperial Textile Co. from $15,000 to $25,000.

New York, Utica. The building just vacated by the Fort Schuyler Knitting Co. will be used by the Mohawk Valley Cap Factory as a box-making plant. Their box-making plant is now located at Third Ave. and Broad St.

New York, Utica. The capital stock of the Avalon Knitwear Co. has been increased from $150,000 to $400,000. A small waste house is under construction and it is thought further enlargements are proposed.

Personals.

David Shepherd has been appointed overseer of dyeing at the Hoosac Worsted Mills, No. Adams, Mass. He was formerly employed at the Geo. H. Gilbert Mfg. Co., Gilbertville, Mass.

Wm. Waterhouse has accepted the position as overseer of carding at the Oak Valley Mill, Tarkiln, R. I. He comes from East Glastonbury, Conn.

James Kirkman, overseer of carding at the Mianus Mfg. Co., Coscob, Conn., has resigned and is succeeded by Henry Groven.

Geo. W. Davis, overseer of dyeing at the Huntington Mfg. Co., Huntington, Mass., has severed his connection with that company. He is succeeded by K. J. Whalen of Pittsfield, Mass.

Albert Hudson has been appointed overseer of the worsted carding department in the No. 4 Mill of the Geo. H. Gilbert Mfg. Co., Gilbertville, Mass., to succeed the late John W. Brogden.

Thomas Hart, overseer of carding at the Locustville Woolen Co., Hope Valley, R. I., has severed his connection with that company.

Wm. Hilton has accepted a position as overseer of weaving at the Edwards Mfg. Co., Augusta, Me. He was formerly employed at the Berkshire Mill, No. 4, North Adams, Mass.

Henry Gahl has accepted the position as overseer of spinning at the Faulkner Mill, Stafford Springs, Conn., succeeding Frank Duffy. He comes from Rockville, Conn.

Harold C. Smith has accepted the position as overseer of carding and spinning at the Heywood Narrow Fabric Co., Fall River, Mass.

Thomas Curtis has accepted the position as overseer of carding at the Atlantic Cotton Mill, Lawrence, Mass. He comes from the Ipswich Mill, Ipswich, Mass.

John J. McMullen, assistant superintendent, and Samuel H. Perkins, an overseer at the Bennett Mill, N. E. Cotton Yarn Co., New Bedford, Mass., have resigned.

Thomas Webster has been appointed overseer of carding and spinning at the Elm Mills Co., Tilton, N. H. He comes from Lowell, Mass., and succeeds Thomas Anson.

E. T. Barnes has accepted the position as overseer of spinning at the Granby Mills, Columbia, S. C. He comes from the Clinton Mfg. Co., Clinton, S. C.

H. C. Dumas has become overseer of weaving, slashing and drawing-in at the Walton Mills, Monroe, Ga.

Frank J. Maley, treasurer of the West Bend Woolen Mills, West Bend, Wis., will sever his connection with that company on or about Jan. 1.

Rowland Sherman, overseer of weaving at the Wakefield Mfg. Co., Wakefield, R. I., has severed his connection with that company. He was presented with a leather covered rocker by those who were employed in his department.

Frank Adamson, overseer of sewing and burling at the Walworth Bros. Mill, Lawrence, Mass., for the past 3 1/2 years, has severed his connection with that company.

Wm. Evans, general superintendent of the Hargraves Mill, Fall River, Mass., also the Parker Mills of Fall River and the Parker Mills of Warren, R. I., has severed his connection with that company. He is to accept the general superintendency of the Fall River Iron Works succeeding the late Samuel E. Hatheway.

J. D. White has been appointed superintendent of the new cotton mill which has been erected at McKinnery, Tex.

G. J. King, overseer of spinning at the Marble City Mills, Sylacauga, Ala., has resigned to take charge of spinning, spooling and warping at the Arcade Mills, Rock Hill, S. C.

Edward W. Netherland, overseer of carding at the Dixie Cotton Mills, LaGrange, Ga., has resigned.

J. E. Hand of Griffin, Ga., has succeeded E. W. Netherland as overseer of carding with the Dixie Cotton Mills, LaGrange, Ga.

Lee Brandon of Magnolia, Miss., has taken charge of the weave room at the Kosciusko Cotton Mills, Kosciusko, Miss.

W. T. Whitaker has taken charge of the weaving, slashing, drawing-in and the cloth room at the Inverness Mill, Winston-Salem, N. C. He comes from the Osage Mill, Bessemer City, N. C.

J. P. McGraw, overseer of the weaving and cloth room at the Saxe-Gotha Mills, Lexington, N. C., has resigned to accept the superintendency of the Millfort Mill, Fort Mill, S. C.

David Price, overseer of weaving at the Merchants Mfg. Co. No. 3 Mill, Fall River, Mass., has severed his connection with that company.

Henry Hamill, overseer of carding at the Forestville Mill, Stafford Springs, Conn., has accepted a similar position with the Faulkner Mill, same town.

Max Job accepted the position as overseer of dyeing at the Rockville Worsted Co., Rockville, Conn. He comes from Woonsocket, R. I.

Matthew Manchester has accepted the position as overseer of weaving at the Clinton Mfg. Co., Woonsocket, R. I. He comes from the Uncasville Mfg. Co., Versailles, Conn.

J. T. Carroll has been promoted to the position of assistant superintendent at the Whittier Mills, Chattahoochee, Ga.

J. A. Parker, formerly of the Cherokee Mills,

Griffin, Ga., has taken charge of carding at Atco, Ga.

F. L. Brannen has accepted a position as overseer of weaving at the Kosciusko Cotton Mills, Kosciusko, Miss. He comes from Magnolia, Miss.

W. F. O'Pry, who was formerly overseer of spinning at Clinton, S. C., has accepted the position of assistant superintendent of the Vardry Cotton Mill, Greenville, S. C.

C. E. O'Pry, assistant superintendent of the Vardry Cotton Mill, Greenville, S. C., has resigned to take charge of the Brogon Mills, Anderson, S. C.

Ralph L. Wilson, formerly general manager, buyer and superintendent of the Floyd Cotton Mills, Rome, Ga., is now acting as general agent for the Lowe Mfg. Co., Huntsville, Ala.

B. L. Amick, from Concord, N. C., has succeeded J. E. Pressley as overseer of carding and spinning in the Warioto Mills, Nashville, Tenn.

Mitchell J. Eno has accepted the position as overseer of weaving at the Uncasville Mfg. Co., Versailles, Conn. He comes from Fiskdale, Mass.

John Hislop has accepted the position as second hand in the spinning department at the American Felt Co., Glenville, Conn.

Hugh B. Fraser, overseer of finishing at the Schuster Woolen Co., East Douglas, Mass., has severed his connection with that company. He is succeeded by Peter Rainville, formerly employed at the Hopeville Mfg. Co., Worcester, Mass.

David A. Provost has accepted the position as overseer of dyeing at the Brodfelt Worsted Co., Clinton, Mass. He comes from Woonsocket, R. I.

Ernest H. Meyers, who recently resigned as overseer of dressing at the Peace Dale Mfg. Co., Peace Dale, R. I., has been appointed overseer of dressing at the Rockville Worsted Co., Rockville, Conn.

Thomas J. Rigney has been appointed overseer of finishing at the Hoosac Worsted Mill, North Adams, Mass. He was formerly engaged in a similar position with S. Slater & Sons, Inc., Webster, Mass.

William W. Quinton, overseer of weaving at the Clinton Mfg. Co., Woonsocket, R. I., has been appointed overseer of weaving at the Suncook Mill, Suncook, N. H.

James A. McLane, it is reported, has been appointed superintendent of the Hargraves and Parker Mill, Fall River, Mass., to succeed Wm. Evans. It is also rumored that John H. Holt, superintendent of the Luther Mfg. Co., Fall River, is to succeed Mr. McLane.

Wm. Dempsey, overseer of the cloth room at the Davol Mill, Fall River, Mass., has resigned to accept a similar position with the Flint Mill, same city.

Oscar Wood has been appointed overseer of carding at the Locustville Woolen Co., Hope Valley, R. I. He was formerly engaged at the Esmond Mills, Esmond, R. I.

P. J. Harney, overseer of weaving at the Tremont Worsted Co., Methuen, Mass., has resigned to accept a similar position with the Hoosac Worsted Co., North Adams, Mass. Mr. Harney formerly held this position when it was known as the Mayflower Worsted Co.

Robert E. Steere, master mechanic at the Globe Mill, Manville Co., Woonsocket, R. I., has resigned after 16 years of service to accept a similar position with the Nashawena Mill, New Bedford, Mass.

Wm. A. Murray, overseer of carding at the No. 2 Bennett Mill, N. E. Cotton Yarn Co., New Bedford, Mass., has been promoted to the position of overseer of combing. He succeeds Edw. W. Stratton, Mr. Stratton having been appointed assistant superintendent of departments 3, 4 and 5 at the same company. Perry O. Halin succeeds Mr. Murray as overseer of carding at the No. 2 mill.

Walter Booth has accepted the position as assistant superintendent of the Elm Mills, Tilton, N. H.

James L. Harring, assistant superintendent of departments 1 and 2, Bennett Mill, N. E. Cotton Yarn Co., New Bedford, Mass., has been appointed superintendent over the entire Bennett plant.

Chas. Mosher has accepted the position as overseer of spinning, spooling, warping and twisting for the N. E. Cotton Yarn Co., New Bedford, Mass. He comes from Danielson, Conn.

George G. Gage, overseer of spinning at the Smith Woolen Co., Pittsfield, Me., has left the employ of that company.

Elias Kershaw, master mechanic at the Acushnet Mills Corporation, New Bedford, Mass., has been appointed master mechanic at the Atlantic Cotton Mills, Lawrence, Mass.

Allan Moors, overseer of finishing at the Knight Woolen Co., Provo, Utah, has resigned and returned to his home in Dexter, Me.

John Joyce has reentered the employ of the Black River Woolen Co., Ludlow, Vt., as boss carder. He succeeds Louis Pendergast.

Wm. E. Ross has accepted the position as overseer of weaving at the Hewson Woolen Mill, Ltd., Amherst, N. S., Canada. He was recently employed at the Forest Mills Co., Bridgton, Me.

Emmett Ainley, designer at the Hockanum Mills Co., Rockville, Conn., has resigned to accept a similar position with the Premier Worsted Co., Wickford, R. I.

John Ingham, in charge of the dyeing at the Burlington Mills, Winooski, Vt., has severed his connection with that company. He is succeeded by Xavier N. Lehman.

Thomas F. Lostus has been appointed overseer of weaving on the night shift at the Princeton

Worsted Mills, Trenton, N. J. He comes from Providence, R. I.

R. E. Gooch has been promoted from the position of overseer of carding to assistant superintendent of the Whittenton Mfg. Co., Taunton, Mass.

Scott S. Hardy has accepted the position as overseer of finishing at the Blackstone Stocking Co., Central Falls, R. I. He comes from Hillsboro, N. H.

Frank P. Ash, assistant superintendent of the Rensselaer and Valatie Mills, Rensselaer, N. Y., has resigned to accept a position as overseer of finishing at the Lion Mfg. Co., St. Johnsville, N. Y.

Peter Costello, Jr., overseer of finishing at the Black River Woolen Co., Ludlow, Vt., has resigned and is succeeded by E. W. Cook.

John J. Brack has been appointed overseer of weaving at the Tremont Worsted Co., Methuen, Mass.

Chas. H. Philbrick has accepted the position as overseer of carding at the Merirmack Woolen Co., Dracut, Mass. He was formerly employed at the Madison Woolen Co., Madison, Me.

John M. Lynch, overseer of carding at the Evansville Woolen Mills, Evansville, Ind., has severed his connection with that company and returned to his home in Franklin, N. H.

Martin O'Toole has accepted the position as overseer of finishing at the Holden, Leonard Co., Bennington, Vt. He succeeds Wm. Jubb.

Joseph W. Bailey, superintendent of the Samoset Co., Valley Falls, R. I., has been appointed superintendent of the Davis Mill, Fall River, Mass., to succeed James A. McLean.

Clifford P. Heath, vice-president of the Woodside Woolen Mills Co., Northboro, Mass., has resigned that position and is succeeded by Seth A. Emery.

Ernest A. Kirby, overseer of carding at the Chace Mill, Fall River, Mass., has been appointed assistant superintendent of the Fall River Iron Works.

Anthony Keenan, overseer of carding at the Merrimack Woolen Co., Dracut, Mass., has resigned to accept a similar position at East Rochester, N. H.

James C. Grant, overseer of weaving at the No. 2 mill of the Great Falls Mfg. Co., Somersworth, N. H., has resigned to accept a similar position with W. C. Plunkett & Sons, Adams, Mass.

James Crossley, who has been superintendent of the Southbridge Print Works, Southbridge, Mass., has resigned to accept a position as assistant superintendent at the American Print Works, Fall River, Mass.

Wallace E. Stoddard has been appointed superintendent of Mill B, Greylock Mfg. Co., Williamstown, Mass., succeeding R. R. Kelly.

Edwin V. Livesey, manager of the Heywood Narrow Fabric Co., Fall River, Mass., has severed his connection with that company. It is reported he is to have the management of a new mill which is to be built at Fall River.

James A. Metcalf has been appointed overseer of weaving at the Newmarket Mfg. Co., Newmarket, N. H. He comes from North Adams, Mass.

Horace S. Hall, superintendent of the York Mfg. Co., Saco, Me., for the past 40 years, is considered one of the oldest cotton superintendents in active service at the present time. He is 78 years of age and enjoys good health.

John T. Abney, who has been superintendent of the Swift Mfg. Co., Columbus, Ga., has been appointed secretary and treasurer of the same.

Chas. A. Sweet has succeeded J. T. Abney as superintendent of the Swift Mfg. Co., Columbus, Ga.

J. T. Carroll has been promoted to the position of assistant superintendent at the Whittier Mill, Chattahoochee, Ga.

J. A. Carter has succeeded E. T. Barnes as overseer of spinning at the Clinton Cotton Mills, Clinton, S. C. He comes from Clifton, S. C.

John W. Brown, recently overseer of weaving at the Muscogee Mills, Columbus, Ga., has taken charge of all the weaving for the Columbus Mfg. Co., Columbus, Ga.

Clifford Barnes, for the past three years overseer of weaving at the Columbus Mfg. Co., Columbus, Ga., has resigned to accept a similar position with the Fulton Bag & Cotton Mills, Atlanta, Ga.

James Dow, superintendent of the Provo Woolen Mills, Provo, Utah, at a meeting of the directors held on December 6, resigned his position at that mill.

Mark A. Smith has been apointed overseer of carding at the Chace Mill, Fall River, Mass., to succeed Ernest A. Kirby.

At the offices of the Toronto Carpet Mfg. Co., on a recent occasion, the foremen and department managers, together with the office and traveling staff, gathered to express to the superintendent of the works, C. H. Thompson, the high esteem in which he is held by all who know him. The meeting was made the occasion of the presentation to Mr. Thompson of a gold watch, locket and chain, also an easy chair. On behalf of those assembled, the president and general manager, F. B. Hayes, and secretary-treasurer, C. V. Harding, conveyed to Mr. Thompson an expression of the feelings of his associates, which took tangible form in the gifts mentioned above. Mr. Thompson briefly expressed his thanks for the honor which had been done him. Mr. Thompson has acted as superintendent for the Toronto Carpet Mfg. Co. for eight years, and to no small extent is that company's success due to his untiring zeal and thoughtful interest in his fellow workers.

C. H. Phillips has resigned as overseer of carding at the Elmira Cotton Mill, Burlington, N. C., to accept a position as superintendent of the Hopedale Mills, Burlington, N. C.

B. E. Dickens has been promoted from the position of overseer of beaming to superintendent of the Holt Plaid Mills, Burlington, N. C.

J. D. Apple has been promoted from loom fixer to overseer of weaving at the Elmira Cotton Mill, Burlington, N. C., succeeding J. S. Clarke, deceased.

J. M. Stewart, formerly master mechanic at the Floyd Cotton Mills, Rome Hosiery Mill and O'Neal Mfg. Co., Rome, Ga.,, has accepted a similar position with the Aragon Mills, Aragon, Ga.

Matthew O'Brien, overseer of dyeing for several years at the Old Town Woolen Co., Old Town, Me., has severed his connection with that company.

Thomas Ashe, overseer of carding at the Wallace & Smith Blanket Co., La Porte, Ind., has severed his connection with that company.

Wm. H. Lowd, overseer of carding at the Cocheco Woolen Mfg. Co., East Rochester, N. H., for the past twenty years, has resigned.

David Shephard, who recently accepted the position as overseer of dyeing at the Hoosac Worsted Mill, North Adams, Mass., has resigned.

James L. Harring has been appointed superintendent of the Bennett Mill, New Bedford, Mass.

Ernest Neild, overseer of mule spinning at the Soule Mill, New Bedford, Mass., has tendered his resignation to accept a position with the Neild Mfg. Co., same city, of which his brother, John Neild, is agent.

John Keough has accepted the position as overseer of carding at the Western Felt Co., Chicago, Ill. He was tendered a farewell reception at his home at City Mills and was presented with a handsome traveling bag by many friends.

Thomas Hanson has accepted the position as overseer of spinning at the Tilton Mill, Tilton, N. H. He was formerly employed at the Elm Mills, same town.

Pardon N. Dexter, for many years overseer of spinning, spooling and warping at the Salmon Falls Mfg. Co., has resigned to accept a position with the National Ring Traveler Co., Providence, R. I.

Harry S. Lytle, foreman of the bleach department at the Oxford Linen Mill, North Oxford, Mass., met with a serious accident while working in the bleach works recently.

James A. McLane was appointed superintendent of the Hargraves and Parker Mills, Fall River, Mass., at a special meeting of the directors held Dec. 15.

Wm. D. Sowter, secretary of the Seekonk Lace Co., Pawtucket, R. I., has severed his connection with that company.

George M. Hawkins, classer of cotton at the Osborne Mill, Fall River, Mass., has accepted a similar position with the Iron Works Mill, same city.

Mark T. Smith has been appointed overseer of carding at the Chace Mill, Fall River, Mass., to succeed Ernest A. Kirby. Mr. Smith has been employed at the Chace Mill, Burlington, Vt., as assistant superintendent.

R. R. Bruce, superintendent of the Massaemet Yarn Mills, Shattuckville, Mass., has severed his connection with that company to accept a similar position with the Aiken Mfg. Co., Bath, S. C.

Ernest E. Clark, superintendent of the Williamsville Mfg. Co., Killingly, Conn., has severed his connection with that company to accept a similar position at Utica, N. Y.

W. G. Reynolds, from Albemarle, N. C., is now overseer of carding at the Dan River Cotton Mills, Danville, Ga.

G. M. Powell, overseer of carding and spinning at the Imperial Cotton Mills, Eatonton, Ga., has resigned to accept the position as assistant superintendent at the Monticello Cotton Mill, Monticello, Ark.

J. T. Mayes has been appointed to the position as overseer of dyeing at the Proximity Mill, Greensboro, N. C.

Ed. Fuquay has been promoted to the position of overseer of spinning at the Elmira Cotton Mill, Burlington, N. C.

Fred Nash, overseer of dyeing at the Yantic Woolen Co., Yantic, Conn., has left the employ of that company and is to leave Norwich in the near future.

J. M. Lawhon, second hand of weaving at the Dan River Mills, No. 3, Danville, Va., has resigned to become overseer of weaving in a mill in Alabama.

A. W. Oldham has been promoted from second hand to overseer of carding at the Durham Hosiery Mills, Durham, N. C.

John W. Kaneer has resigned as superintendent of the National Cotton Mills, Lumberton, N. C., to take charge as superintendent and general manager of the new mill at Vass, N. C.

W. H. Ramsay, overseer of spinning at the Maple Cotton Mills, Dillon, S. C., has resigned.

S. T. Dover, formerly with the Saco-Pettee Machine Works, has accepted a position as overseer of carding at the Ide Cotton Mills, Jacksonville, Ala., succeeding John H. Stevens.

T. S. Bolton, who was for eight years overseer of weaving at the Arcade Mills, Rock Hill, S. C., but more recently of Augusta, Ga., has succeeded W. E. Wall as overseer of weaving at Bamberg, S. C.

J. S. Hughes, overseer of spinning for several years at the Ide Cotton Mills, Jacksonville, Ala., has resigned to accept a similar position with the Tallapoosa Cotton Mills, Tallapoosa, Ga.

R. S. Scarboro has been appointed overseer of spinning at the Cannon Mill, Kannapolis, N. C., succeeding T. B. Moore.

F. S. Hage, overseer of weaving at Winston-Salem, N. C., has resigned to accept a position as second hand of weaving at Roanoke Rapids, N. C.

Robert Clark has accepted a position as overseer of weaving at the Saxe-Gotha Mill, Lexington, S. C.

John H. Stevens, overseer of carding at the Ide Cotton Mills, Jacksonville, Ala., has resigned to accept his old position held for some time as overseer of carding at the Pelham Mfg. Co., Pelham, Ga.

Fred Greenwood, overseer of dyeing at the Montmorency Cotton Mills, Montmorency Falls, P. Q., has resigned to accept a similar position at the New Bedford Agawam Dyeing & Finishing Co., East Wareham, Mass.

Peter Sheehan has accepted the position as overseer of dressing at the Sheridan Woolen Co., Ashuelot, N. H.

C. J. Dohn has accepted the position as superintendent of Cooper, Wells & Co., manufacturers of hosiery, St. Joseph, Mich. He was formerly superintendent of the Holston Mfg. Co., Lenoir City, Tenn.

Albert Crabtree, at one time overseer of dyeing at the Ray Mill, American Woolen Co., Franklin, Mass., and later with the Southwark Mills, Philadelphia, but recently with the American Felt Co., of Boston, Mass., has been appointed assistant manager of the American Felt Company's mill at Franklin. He is succeeded at the Boston office by D. A. Provost, who recently took a position as overseer of dyeing at the Brodfelt Worsted Co., Clinton, Mass.

Alba F. Clark, an employe of the Carolina Mills Co., Carolina, R. I., and employed in the dye house, met his death on Tuesday, Dec. 20. by being caught in the shafting. He leaves a wife and three small children.

Eugene Sullivan has accepted the position as overseer of carding and spinning for J. Broadbent & Son, Unionville, Conn.

A. B. Crowell has accepted the position as overseer of dressing at the Stillwater Worsted Co., Greenville, R. I. He was formerly employed at Brooklyn, N. Y.

F. Luther Goodspeed has been engaged as second hand of ring spinning at the Dana Warp Mill, Westbrook, Me.

Wm. Starling has been appointed overseer of spinning for J. Broadbent & Son, Unionville, Conn. He comes from Yantic. Conn.

John Bellis has been appointed overseer of weaving at the Popular Worsted Co., Lehigh & Mascher Sts., Philadelphia, succeeding Frank Clark.

Scott Hardy has accepted the position as overseer of finishing at the Blackstone Stocking Co., Central Falls, R. I. He comes from Hillsboro, N. H.

Joseph Conway has accepted the position as overseer of weaving at the Westmoreland Mfg. Co., Philadelphia.

Wm. J. Mason has accepted the position as overseer of spinning at the Frisbee Mfg. Co., Stuyvesant Falls, N. Y. He was formerly employed at the Atlantic Cotton Mill, Lawrence, Mass.

DEATHS.

H. G. B. Fisher, president of the North Adams Mfg. Co., and a leading citizen of North Adams, Mass., also a director of the North Adams National Bank, died at his home on Church St., December 1, with indigestion. He had been ailing for some time, but his condition was not thought serious. He was born 76 years ago in Dedham, Mass. He was a staunch Republican and a member of the Home Market Club of Boston. One brother and a nephew survive him, his wife having died some years ago.

Joseph P. Murphy, senior partner of the firm of Murphy & Bro., Philadelphia, manufacturers of worsted men's wear and dress goods, died suddenly of heart failure. The funeral was held from his late home. He was 65 years of age, and is survived by a widow.

Michael Norton, 75 years of age, and one of the leading citizens of Great Barrington, Mass., was found dead at the home of Robert S. McCurdy. Mr. Norton had been overseer of carding at the Monument Mills, Housatonic, Mass., for several years. His wife died several years ago. He is survived by one daughter.

James A. Hathaway, formerly president of the Border City and the Sagamore Mfg. Co., Fall River, Mass., died at his home in Brighton following a stroke of paralysis.

Wm. Dyson of Dyson & Platt, woolen manufacturers at Rockford, Ill., died after an eight weeks' illness, at the age of 82 years.

Wm. Orrell, for many years an overseer in the Lyman Mills, Holyoke, Mass., died at his home on High St., in that city, at the age of 82 years. He is survived by two children.

Christian E. Hertlein, for thirty years a manufacturer of dress trimmings in New York City, died suddenly at Genoa, Italy, Dec. 1. He was born in Erlangn, Bavaria, in 1848, and came to New York in 1866. He is survived by a wife and three daughters.

Major John F. Hanson, president of the Central Georgia R. R., and one of the best known men in the South, died at Atlanta, Ga., Dec. 15. He was born Nov. 25, 1840. In 1876 he organized the Bibb Mfg. Co. of Macon, Ga.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

New Mills.

*Massachusetts, Fall River. The cotton mill project in which Eben C. Willey and others have been reported interested has taken definite shape and the Pilgrim Corporation has been organized. Five buildings will be erected and equipped with 50,000 spindles and 1,200 looms for making fine cotton cloths. The capital stock is $1,050,000, of which $700,000 is preferred stock.

*Massachusetts, New Bedford. About the first of the year the new cotton mill company being promoted by Chas. T. Luce will be organized. Plans are being drawn at the present time for a mill of 20,000 mule spindles, 30,000 ring spindles and 1,200 looms for manufacturing fine and medium fancy cotton goods. The proposed capitalization is $850,000 and it is planned to begin construction work next March and to begin manufacturing in the fall of 1911. No contracts have been awarded and Mr. Luce is interested in complete equipment for a mill of this kind, including a steam power plant of 1,500 h. p.

*North Carolina, High Point. Good progress is being made on the construction of the new Pickett Cotton Mill. The main building will be 104 by 304 ft., of brick and reinforced concrete. 12,000 spindles and 300 looms will be the equipment. The Central Carolina Construction Co. of Greensboro is doing the construction work and Lockwood, Greene & Co. of Boston are the architects. It is expected the plant will be ready for operation early in 1911.

*North Carolina, Lexington. O. A. Robbins of Charlotte, and the New England men associated with him in the new cotton mill project, have decided to locate at Lexington. $100,000 of the stock will be taken by Lexington investors. As reported some time ago, this is a $400,000 or $500,000 project and a 20,000-spindle mill for making fine cotton goods will be built and equipped.

*North Carolina, Lumberton. The Jennings Cotton Mills are nearing completion and work on operatives' cottages has been completed. It is expected that manufacturing will be started by the first of March. The capacity of the mill is about 8,000 spindles.

*North Carolina, Meadow Summit. F. C. Newlin of Fayetteville and Spray is promoting the proposed Fine Arts Gingham Mfg. Co. A building will be erected, 500 ft. long by 110 ft. wide with saw-tooth roof early in 1911 and will have equipment of 10,000 spindles and 400 looms for manufacturing colored dress goods. The company will be capitalized at $300,000. Electricity and steam will be used for power and the concern will equip a dye house for dyeing yarns.

*North Carolina, Winston-Salem. Early in January the Inverness Mills Co. will complete its plant. The main building is 104 by 201 ft., 2 stories high; picker building, 30 by 65 ft., 8,000 spindles and 200 40-inch automatic looms for manufacturing print cloth will be the initial equipment, although the mill has capacity of 10,000 spindles. The plant will be driven and lighted by electric power from the Winston-Salem transmission lines of the Southern Power Co. The capital stock is $200,000. H. G. Chatham is president and Lawrence McRae is treasurer and buyer.

*South Carolina, Greenville. J. I. Westervelt reports that the new India lawn mill will be known as the Westervelt Mills and that he will be president, treasurer and manager. A superintendent has not been selected. The capital stock of the new concern will be $1,000,000 and a mill will be built and equipped with 50,000 ring spindles and 1,400 looms to be driven by electric power. Woodward, Baldwin & Co. will act as selling agents. Mr. Westervelt states that they plan to begin building operations about January 1 and to begin the manufacture of goods in October or November, 1911. From 300 to 400 hands will be employed at first. Lockwood, Greene & Co., Boston, will be the architects and engineers in charge.

*South Carolina, Laurens. It is expected complete plans for the new Connemara Mills will be arranged within sixty days. As noted previously, a charter has been secured with capital stock of $400,000. J. Adger Smyth, president and treasurer of the Watts Mills, and N. B. Dial, president of the Laurens Cotton Mills, head the new company.

*South Carolina, Newberry. Contract for the erection of the main building for the new Oakland Cotton Mills has been awarded to the Fiske-Carter Construction Co. of Worcester, Mass., and Spartanburg, S. C. This will be a 4-story structure, 130 by 216 ft., and will be equipped on its completion with 20,000 spindles and 600 looms for manufacturing print cloth, as noted in an earlier report. Another building is to be erected for engine room and warehouse, also a number of cottages for operatives. Lockwood Greene & Co., Boston, are the architects and engineers. W. H. Hunt is president of the new company; John M. Kinard, vice-president, and F. N. Martin, secretary.

*Texas, McKinney. The new Texas Cotton Mill Co., mentioned in previous reports as the Lone Star Cotton Mill, will begin manufacturing December 15, making chambrays, denims, tickings

and other colored goods. 5,140 ring spindles and 160 looms, steam power plant, and dye house for raw stock and yarns, have been installed. The capital stock is $190,000, all paid in. J. Perry Burrus is president; J. L. White, treasurer, and Paul K. McKinney, superintendent. Messrs. White and McKinney attend to the buying.

Enlargements and Improvements.

*Alabama, Tallassee. Improvements in the power plant of the Tallassee Falls Mfg. Co. will be made by the installation of a 200 k. w. generator. Contract for electrical equipment has been awarded to the Westinghouse Electric & Mfg. Co. Contract for 500 looms has been awarded previously to the Draper Co. This is one of the mills of the International Cotton Mills Corp., of which J. D. Armitage, 86 Worth St., New York, is general manager.

*Connecticut, Voluntown. The new machinery equipment received by the Briggs Mfg. Co. is being installed in No. 4 Mill and includes a new water wheel, new cards, combers and Universal winders. This is not a new mill and they are merely adding to the equipment.

*Georgia, Columbus. Manufacturing has been started in the enlargement recently completed by the Columbus Mfg. Co. This addition was started in August, 1909, and includes a 4-story structure, 272 ft. long. The new machinery includes about 25,000 spindles and 600 looms, which nearly doubles the plant.

*Massachusetts, Clinton. The new mill of the Lancaster Mills, known as the Amory Mill, is nearly completed, both inside and out. It is expected the machinery to be installed will arrive by January 1. Nothing but carding, spinning and preparatory machinery will be installed at first, but all the new space will not be filled up by the first installation, the plans of the management being to provide only for the immediate needs of the weaving department.

Massachusetts, Taunton. Two hundred new automatic looms and other equipment have been received by the Whittenton Mfg. Co. and are replacing old equipment which is being taken out.

Massachusetts, West Warren. In addition to building a new machine and carpenter shop, as recently reported, the Warren Cotton Mills of the Thorndike Co. plan to extend the cloth room.

New York, Cohoes. Plans have been completed for enlarging the cotton spinning plant here of the Fuld & Hatch Knitting Co. Fine combed yarns will be made in larger quantities. The knitting plant and main office is at Albany.

*North Carolina, Belmont. All necessary equipment and materials for the previously reported increase in the capacity of the Majestic Mill have been bought. 60s and 80s combed Egyptian and 80s to 120s combed Sea Island yarns are made.

*North Carolina, Durham. The additional building of the Golden Belt Mfg. Co., erected to enlarge the bag department, has been completed. It is 3 stories high, 75 by 120 ft., and cost about $26,000. Printing machines and other equipment for bag manufacture will be installed.

Pennsylvania, York. The York Cotton Co., manufacturers of men's wear on 24 narrow looms, with Frank W. Wheeler superintendent, whose plant is now shut down, report that within a few days they will start up again in full; 20 new broad looms will also be installed and in the future the plant will be run on both broad and narrow goods. The production is sold through New York.

Rhode Island, Arkwright. An addition is being built to the spinning department of the Interlaken Mills and several new spinning frames will be installed. Some of the mules are to be replaced by new ring frames. The office is in Providence.

*Rhode Island, Central Falls. The new weave shed of the Waypoyset Mfg. Co. is ready for the installation of looms and good progress is being made on the new spinning mill, which will be equipped with 35,000 spindles.

Rhode Island, River Point. A new engine is to be installed in the Royal Mills, B. B. & R. Knight, as soon as the water power is sufficient to allow the steam power plant being stopped temporarily.

Rhode Island, Woonsocket. The Estate of Edgar K. Ray is building an addition to the plant on Bernon St. and will install new machinery. The addition is to be 4 stories high, 40 by 25 ft., of concrete construction. The office is at Franklin, Mass.

South Carolina, Chester. A finer grade of ginghams and madras is to be manufactured in the Springstein Mills and some changes are being made in the equipment.

*South Carolina, Rock Hill. On the completion of the enlargement contracted for by the Arcade Cotton Mills the total equipment will be 30 cards, 18,576 spindles and 510 looms. It is expected the new machinery will be in operation before May 1.

Texas, Cuero. It is asserted that negotiations have been completed which will insure the reorganization of the Cuero Cotton Factory along plans recently outlined. The reorganized company will have capital stock of $125,000 and will probably double the present equipment. The plant now contains 5,000 ring spindles and 160 looms, which have been operated on sheetings and similar goods.

*Vermont, North Pownal. Work has been started on changes to be made in the North Pownal Mills, now owned by the Greylock Mills of North Adams, Mass.

WOOLEN.

New Mills.

*Connecticut, Phoenixville. The new Phoenixville Carpet Co. is rushing the work of making changes in the plant and manufacturing will be started soon. James H. Walsh and Thomas P.

Mellody are the men interested in the new company.

Massachusetts, Lowell. One of the mills of the Middlesex Co. will be equipped by the Lowell Felt Co., a new corporation, for the manufacture of wool felts and wool wadding, just as soon as machinery can be built and set up. The new corporation has been organized with capital stock of $25,000 by W. D. Smith, president; Dwight Smith, treasurer and buyer. E. R. Libby, formerly connected with the Millbury (Mass.) mill of the Felters Co., will be superintendent of manufacturing. A dyeing plant will be equipped and both steam and water power will be used. In October Dwight Smith sold his interest in the Bacon Felt Co. at Winchester to Bacon Bros., Inc., and withdrew to organize this new company. The Boston address of Dwight Smith & Son is 367 Congress St.

Pennsylvania, Philadelphia. The Franklin Worsted Mills, with 8 broad looms, have started up in the manufacture of fine worsted men's wear at 2706 N. Hancock St., with J. Turner, also engaged in the manufacture of hair cloth at Howard St. and Lehigh Ave., as the proprietor.

Pennsylvania, Philadelphia. It is reported that a new concern to be known as the Balmoral Textile Company will equip a plant at Kensington Ave. and Venango St., for the manufacture of rugs.

*Pennsylvania, Wilkesbarre. The Diamond City Rug & Carpet Co., a new corporation, is manufacturing rugs from old carpets, colonial rugs and similar goods on 10 hand looms. Leased space is occupied now, but within a short time they expect to build a mill adapted to the business. The capital stock is $5,000. D. T. Scott is president and D. F. Kile is treasurer, superintendent and buyer. 4/8s cotton warp is bought.

*Washington, Spokane. Otto Gunderson has one set of cards, 200 mule spindles and several looms at present and intends to add machinery from time to time. By March or April he expects to have all the machinery he has at the present time in operation. Mr. Gunderson, who has operated the Spokane Steam Carpet Cleaning & Weaving Works since 1886, is the sole owner.

Enlargements and Improvements.

Connecticut, Middletown. Contract has been awarded by the Rockfall Woolen Co. for a 2-story addition, 48 by 80 ft. It is planned to largely increase the output. Cotton warp horse blankets are manufactured.

Connecticut, Norwich. Twenty-two new looms are being installed by Hall Bros. in the Thames Valley Mills to replace the same number of old looms.

Kansas, Topeka. Automatic sprinklers are being installed in the plant of the Western Woolen Mill Co.

*Maine, Corinna. New looms are being installed by Burrill & Clark, manufacturers of cotton warp cassimeres.

Maine, Oakland. The Oakland Woolen Mills Co. has installed an electric motor in the finishing room on account of an insufficient supply of water to supply power for running the mill.

Maine, Sanford. New water wheels are being installed in the Maine Alpaca Dept. of the Goodall Worsted Co.

Maryland, Oella. W. J. Dickey & Sons, Inc., will build a dam on the Patapsco River about 200 ft. long and 26 ft. high. Contract for the construction work has been awarded to the Ambursen Hydraulic Construction Co. It is expected about 1,000 h. p. will be developed. This company manufactures cassimeres, kerseys, suitings, overcoating and similar goods on 19 sets of cards and 104 broad looms.

*Massachusetts, Charlton City. Following the increase in the capital stock of the Worcester Wadding Mfg. Co. and the changing of the name to the National Wadding Mfg. Co., the plant will be enlarged to some extent. Five sets of cards are operated on wadding. Abraham Solod is president; Chas. Putnam, treasurer and buyer, and Arthur C. Solod, superintendent.

Massachusetts, Clinton. The Bigelow Carpet Co. has awarded contract to the General Electric Co. for electric motors for all their looms with the exception of those in the new weave shed which were equipped with motors at the time they were installed.

*Massachusetts, Holyoke. One department of the new mill of the Farr Alpaca Co. on Bigelow St. is in operation and the other departments will be run as soon as transfer of the machinery can be made. Equipment is being taken from the old 4-story mill which is to be torn down and replaced by a weave shed for which plans have been prepared.

Massachusetts, Hudson. The Hudson Combing Co. has leased a part of what is known as the Cohair Building and is putting it in readiness for the installation of machinery. The capacity of the Hudson Combing Co. is to be largely increased and it is expected the new space will be used for manufacturing about January 1, giving employment to 20 additional hands. E. Lester Larkin is president and H. T. Dyson is treasurer.

*Massachusetts, Medway. Contract to build a brick dye house at the Sanford Mill, 50 by 25 ft., has been awarded by the Fabyan Woolen Co. to Joseph Jones of Willimantic, Conn.

Massachusetts, Newton. Preparations are being made by the Saxony Worsted Mills to greatly enlarge the plant here. It is reported additions will be built and a large number of new operatives employed. An association is being formed in Newton and Newtonville to consider a plan for housing the new operatives.

*Massachusetts, North Adams. Strong, Hewat & Co. will install machinery in part of the new building which it was planned to use for office purposes. A new office building will be built later.

Massachusetts, Ware. The addition being built for the George H. Gilbert Mfg. Co. is to enlarge the dressing room at No. 1 Mill at Gilbertville. It is 2 stories high, 25 ft. long and 55 ft. wide. The carding department is being operated overtime three nights a week.

Minnesota, Fergus Falls. The new mill of the Fergus Falls Woolen Mills Co. is nearing completion and the old mill will be closed December 24 to allow of the removal of the equipment to the new building. A knitting department has been added with equipment of 5 flat knitting machines and 5 sewing machines for making men's ribbed underwear and fancy knit goods. They will operate by electric power and dye and finish the product.

New Hampshire, Wilton. A new roof is being put on the dye house of the Wilton Woolen Co. This plant was started up in the summer by P. F. Amidon of Hinsdale after an idleness of over a year.

*Ohio, Cleveland. According to present plans the National Woolen Co. will use the new 3-story brick building, for which ground has just been broken, exclusively for the preparing of raw materials and for storage. They are, however, making provision to convert the first floor into a card room at a later date. The building and whatever equipment is put into it will be modern in every detail and it is expected will be ready for use about March 1.

Pennsylvania, Philadelphia. The Delaine Mills, now located at 5th and Columbia Ave., where they operate 60 broad looms on worsteds, are removing their plant to larger quarters at Baker and Leverington Ave., Manayunk, taking over the building vacated some time ago by the late Empire Worsted Co.

*Rhode Island, Bristol. The addition being built to the plant of the Namquit Worsted Co. is about half completed. It is of wood construction, about 40 ft. in length.

Rhode Island, Greenville. The Stillwater Worsted Co. has taken over the equipment of the Monset Mills of Providence, and moved it to Greenville.

Rhode Island, Woonsocket. It is reported the Lafayette Worsted Co. will build a large brick addition. They make fine worsted yarns on the French system.

Rhode Island, Woonsocket. Contract has been awarded to the Ball & Wood Co. of Elizabethport, N. J., by the French Worsted Co. for furnishing and erecting a 750 k. w. mixed flow Rateau-Smoot turbine and Smoot alternating current, three phase, 60 cycle generator with directly connected exciter. The Rateau Steam Regenerator Co. holds the general contract. The new installation will increase the power plant capacity of the French Worsted Co. by 1,075 h. p.

West Virginia, Webster. The Webster Woolen Mills Co. has shut down its plant temporarily while a new set of cards is being installed. A number of improvements have been made in the past year, including increases in the power department and weave room.

Wisconsin, Hartford. It is probable that cards will be installed at an early date in the Alberta Mills. I. F. Potter, Johnstown, N. Y., is buyer.

Mills Starting Up.

Connecticut, Dayville. The Glen Worsted Co. will begin business with $6,000 paid in. Wm. K. Litch has been elected president; Fred F. Arnold, treasurer, and Edward F. Lovejoy, secretary. As noted previously the Glen Worsted Co. is starting up the old mill formerly operated by the Davis & Brown Woolen Co.

Kentucky, Franklin. The property of the Franklin Woolen Mills Co. has been purchased by a new company composed of T. W. Stringer, Claude Enbank and M. E. Johnson and will be reopened about January 1.

Mills Shutting Down.

Illinois, Rockford. Dyson & Platt have closed their plant indefinitely, Owen Platt, who has been superintendent and buyer, having retired from business and left Rockford to live with his daughter at Millburn, N. J.

Maine, Bridgton. The Forest Mills Co. is running out the stock in process preparatory to shutting down the plant. It is not known how long the mill will remain closed.

Utah, Provo. It is reported that Jesse Knight, president of the Knight Woolen Co. which several months ago started up the old Provo Woolen Mill, has decided to shut down the mills. Mr. Knight is quoted as saying that the plant has not been run at a profit since it was reopened, and that he hopes arrangements can be made which will justify the resumption of manufacturing within a short time.

SILK.

New Mills.

*New Jersey, Alpha. Construction work has been practically completed on the concrete mill being built for the Alpha Silk Co., controlled by John Ramsay & Sons of Phillipsburg, N. J. Machinery will be installed in a week or two for making chiffon and crepe twist. Later other equipment will be installed.

New Jersey, Paterson. Space in the Essex Mill on Mill St. has been leased by Barnet Katz and he has installed 8 looms for the manufacture of broad silks.

*Pennsylvania, Dickson City. Operations will be started in the new plant of the Frisbie Throwing Co. within a short time. The Frisbie Co. also operates a plant at Tobyhanna.

*Pennsylvania, York. Plans for the new silk ribbon mill of E. & H. Levy of New York City, which will be erected at the corner of Boundary Ave. and Pine St., are in the hands of contractors and contract will be awarded within a few days.

The work of erecting buildings will be begun this winter and the factory it is expected will be in operation before April 1.

Enlargements and Improvements.

Connecticut, Willimantic. The Windham Silk Co. has awarded contracts for the heating and plumbing in their new building. The heating contract has been let to the Rhode Island Supply & Engineering Co. of Providence, and the plumbing contract to Moriarty & Rafferty of this city.

Maryland, Lonaconing. Some new machinery is being installed in the local plant of the Klots Throwing Co.

New Jersey, Burlington. The Burlington Silk Co. has moved to its new mill here the machinery recently purchased in Paterson, which was formerly in the Neuberger, Phillips Silk Co.'s plant. No more machinery will be added until this has been put in running order.

New Jersey, Paterson. Another floor in the Todd mill extension has been leased by the Belmont Silk Co. and 14 broad silk looms will be added to their equipment.

New Jersey, Paterson. The Mapele Silk Co. will add 20 looms to their plant on Totowa Ave.

New York, New York City. An addition, 100 by 50 ft., for the Tremont Mills, manufacturers of narrow silk ribbons, is nearly completed. The equipment of their annex on the opposite side of the street will be installed in the new building on its completion and later new machinery may be installed.

*Pennsylvania, Allentown. Hunsicker, Good & Co. have ordered 5 new ribbon looms to be set up in their new ribbon mill at Fountain and Allen Sts. This will give them equipment of 10 looms with space for 12 more looms. These may be added at an early date. The auxiliary machinery has sufficient capacity for their needs at present.

Pennsylvania, Trevorton. Work has been started on an addition to the local silk plant of J. H. & C. K. Eagle which will double the capacity of the plant. Other improvements to cost about $10,000 are under way. The main office and mill is at Shamokin, Pa.

MISCELLANEOUS.

Connecticut, New London. It is reported the Thames Dyeing & Bleaching Co. contemplates making an enlargement. Raw stock is dyed and bleached. T. G. Haney is treasurer, manager and buyer.

*Connecticut, Norwalk. The Dresden Lace Works have begun manufacturing. Several months ago the Muller Gloria Mills began work on an enlargement to their plant to be occupied by the new lace company. This has been completed and machinery installed and the concern is now turning out the same kind of laces that are made in the home plant in Dresden, Germany. A charter will soon be applied for under the laws of New Jersey. Richard Muller of the Muller Gloria Mills will be vice-president and Karl Neuhoff, the New York selling agent, will be an officer. The building occupied is 3 stories high, 50 by 270 feet. Eighteen lace machines have arrived and 8 more will be received. For the present the product will not be bleached and finished at the plant, but eventually it is expected a bleachery will be established here. Power is furnished by the Muller Gloria Mills.

*Florida, Tampa. The Sisal Hemp & Development Co., reported incorporated last week with capital stock of $100,000, will develop the sisal plant in this state, planting about 2,000 acres, and will begin the construction of a mill to extract the fiber and manufacture yarns, twines, rope, etc., about next March. They expect to begin manufacturing some time next year. They are interested in a steam power plant with engine of about 100 h. p., sisal machinery, fiber decorticator, rope machinery, etc. Samuel Borchardt is president; Arthur W. Knowles, vice-president, general manager and buyer, and J. R. Tatum, treasurer.

Maine, West Kennebunk. The foundation is being put in for a wing to be built to the twine mill of the R. W. Lord Co. Seine nets and fishing lines are manufactured. At the present time the mill is handicapped by lack of water power.

*Maryland, Baltimore. It is stated the Maryland Bleach & Dye Works will rebuild at once their factory, which was destroyed by fire a few days ago. The loss is between $15,000 and $20,000, partly covered by insurance.

Massachusetts, Brockton. An addition, 40 by 40 ft., is being built for the Lapworth Webbing Co. and when completed will be equipped with 5 new looms for manufacturing elastic webbing. Willard E. Everett is treasurer and buyer and Chas. A. Lapworth is superintendent. The plant is operated by electric power.

Massachusetts, Brockton. Within a short time the Star Webbing Works will remove into their new quarters on South Skinner St. and add new equipment, probably comprising 7 new looms, to the 6 looms now operated. Work on the building, which is 64 by 54 ft., 1 story high, has just been completed. Plans are under consideration to incorporate the business under the style of the Star Webbing Co. and if this is done John Taylor will be president and buyer and Ernest McLeod, secretary. Shoe strapping, women's belts and other narrow fabrics are woven.

Massachusetts, Canton. The Springdale Fiber Co., owned and controlled by John H. Meyer, New York, who also owns and controls the Springdale Finishing Co. of this place, will degum, prepare, spin, weave and dye ramie. They have been experimenting for nearly a year with processes for the manufacture of ramie and are now installing spinning machinery made to order. By the beginning of the new year they expect to be able to produce in large quantities various sizes of ramie yarns.

Massachusetts, Lowell. The Merrimack Utilization Co. has leased No. 3 Mill of the Middlesex Co. and will remove its equipment to the new quarters. The Atherton Mill at Tewksbury, which has been occupied by the company since its organization last February, has been outgrown. The new quarters, which include a 6-story mill with storehouse, will give more than three times the space occupied in the old plant. S. H. Roberts, 201 Devonshire St., Boston, is manager and selling agent.

Michigan, Jackson. The Prison Board of Control has awarded contract for new spinning machinery for the binder twine plant of the Michigan State Prison.

*North Carolina, Spray. Preliminary construction work has been started on an addition for the American Warehouse Co. The enlargement will be 3 stories high, 175 by 300 ft. The concern finishes cotton piece goods and has equipment of 32 napping machines and other machinery.

Pennsylvania, Bethlehem. The Bethlehem Dye Works has just started up a plant for the dyeing of fast blacks and colors on hosiery at 68 Water St. The capacity is 2,500 pounds per day. A. B. Harbison is treasurer and buyer.

Pennsylvania, Philadelphia. The Niagara Thread Co., on American St., below Chestnut, are again arranging for the increasing of their equipment; floor space has been leased and additional machinery will be installed at once for the manufacture of sewing threads and mercerized and glazed cotton. This concern has been making a specialty of a thread for the underwear trade. The product is sold direct.

Pennsylvania, Philadelphia. William Melcher's Fidelity Finishing Works, in which he is dyeing and finishing cotton, woolen and worsted fabrics, making men's wear a specialty, now at Mascher and Turner Sts., are to be removed to the buildings formerly occupied by the Hughes Manufacturing Co., on Trenton Ave., above Clearfield St. The buildings are being remodelled and improved and will be occupied by Mr. Melcher as soon as they are in condition.

Pennsylvania, Philadelphia. Felton & Stott have started up a plant with 30 braiders at 2024-26 N. 10th St., where they are manufacturing a line of braided elastic webbing of silk, mercerized and cotton yarns and selling direct.

Pennsylvania, Philadelphia. The Copley Texfile Manufacturing Co., Inc., has succeeded the Copley Winding Works, formerly at 1839 E. Madison St. The plant in addition to being doubled as to its equipment is now occupying the two-story and basement building at 1818-20 E. Clearfield St., where they are coning, tubing, winding and spooling cotton, worsted, woolen and merino yarns for the weaving and knitting trade. George Hinchliffe is manager and treasurer. Other improvements are also under contemplation.

Rhode Island, Providence. Ground has been broken for an addition for the Providence Braid Co., 2 stories high, of brick construction, with boiler house adjoining. The company also contemplates the erection of a separate mill building at the rear of the present mill, giving additional floor space. Harrison B. Huntoon, Providence, is president and manager.

*Rhode Island, Pawtucket. It is expected the new adition to the dye house of the Robt. D. Mason Co. will be completed about January 1. It is of concrete, saw-tooth roof construction.

FIRES.

Maryland, Baltimore. Fire nearly destroyed the plant of the Maryland Bleach & Dye Works at 2805 Hudson St. The damage is estimated at $35,000. The insurance is $40,000.

Massachusetts, City Mills. The shoddy mill owned by Mann & Buckley, known as the City Mills Woolen Co., has been burned to the ground. The loss is estimated at about $8,000. The concern has been doing a successful business and it is likely they will rebuild.

New York, Brooklyn. The loss in the recent fire in the plant of the Manhattan Shoddy Works, 274-96 Eagle St., Greenpoint, is about $20,000. Wm. T. Garry is proprietor.

Pennsylvania, Philadelphia. A fire which started in the plant of the Lowry Knitting Works at 5120 Wakefield St., Germantown, damaged the establishment to the extent of $2,500. The damaged portion of the building is being repaired and work will be continued as heretofore. The Lowry Co. manufactures sweater coats and underwear with 7 body frames and 6 sewing machines.

Rhode Island, Hope Valley. Two floors of the Locustville Woolen Co. have been destroyed by fire which started in a cone duster. The loss is estimated at $25,000. Repairs will be made as fast as possible.

Pennsylvania, Philadelphia. A fire which started on the second floor of the knitting mill of Woodcock & Kinzel damaged a large amount of stock. The mill was operated on men's and women's cotton hosiery, which they finish and sell direct. The damage to the plant is not given, but it will be shut down for several days for the purpose of putting the machinery in shape.

Pennsylvania, West Pittston. The Union Hosiery Mills, operated by Chas. Sheppard on men's seamless half hose and stocking feet ,containing 30 knitters, 4 ribbers, 3 loopers and 3 sewing machines, the production being dyed and finished at the plant, has been destroyed by fire. It is not known at this time whether it will be started up again or not.

FACTS AND GOSSIP.

*Alabama, Selma. A charter has been granted the Helen Cotton Mill Co. with capital stock of $20,000. Wm. D. McNeill and Loula V. McNeill of Fayetteville, N. C., and Hugh Mallory of Selma,

are the incorporators. The new corporation will operate the Cawthon Cotton Mill, which as reported last week has been purchased by Mr. McNeill who will move to Selma at once and put the plant in shape for manufacturing.

California, San Francisco. W. Morris Cashman has dropped his woolen mill project for the present owing to unfavorable labor conditions. He states that he is ready to go ahead and organize a company as soon as labor restrictions are removed, but that proposition is rather indefinite.

Canada, Ontario, Peterboro. G. W. Farrell & Co. have organized a Canadian company known as the Brinton Carpet Co., Ltd., and purchased the Brinton Carpet Co. of Canada ,established here about three years ago. Extensive additions are planned.

Connecticut, East Killingly. It is reported that the property known as the Ross Mill has been sold to a Pascoag (R. I.) man who will equip it with 65 looms for the manufacture of worsted goods. Investigations fail to obtain the name of the purchaser.

Connecticut, Elmville. On account of its constantly increasing business the Thistle Worsted Co. is considering the matter of adding to its equipment after the first of the new year.

Connecticut, Mystic. The Mystic Mfg. Co. has filed application with the Secretary of State for an increase in the authorized capital from $50,000 to $250,000. They have no intention of making an immediate issue of new stock and are simply preparing for a future enlargement of the business.

Connecticut, Quinebaug. The business of the Intervale Mills Corp. will be continued as a copartnership. The corporation has been dissolved as noted in a previous report.

Connecticut, Vernon. Final certificate of dissolution has been filed by the Vernon Woolen Co. The plant was burned over a year ago and following this disaster the company decided to go out of business.

*Georgia, Hartwell. John M. Geer of Easley, S. C., is trying to interest $40,000 of local capital in a new company to operate the Witham Cotton Mills. It is reported that this amount will be secured and that it will not be long before the mills will be started up and the capacity increased from 6,000 spindles to 8,000 or 10,000 spindles.

*Illinois, Rockford. The plant of Dyson & Platt will remain closed until it can be leased or sold to other interests. Mrs. Owen Platt and Wm. Dyson, who were interested in the firm of Dyson & Platt, both died within the past few months and Owen Platt, who has been the active manager of the business for the past 12 years, has concluded to retire and make his future home at Mullburn, N. J.

Illinois, Chicago. The plant and business of the Universal Thread Co. has been purchased by the Henry Myer Thread Mfg. Co. and the machinery has been shipped to the Myer Co.'s mill in Frankfort, Pa. The purchase includes good will and all rights to trade marks, labels, etc.

Iowa, Des Moines. The lace manufacturer who is in correspondence with the Greater Des Moines Committee regarding the location of a lace manufacturing plant here is not now actively in business. He intends to visit Des Moines before the end of the year and to get in touch with local conditions with a view to learning whether his own capital in combination with local capital will be sufficient to establish a lace industry here. The name of the man cannot be made public at the present time.

*Maine, Dexter. Officers have been elected as follows for the new Morrison Woolen Co., incorporated a few days ago with capital stock of $40,000 to take over and operate the Morrison mills, N. M. Morrison, president; J. L. Morrison, treasurer, and L. B. Gordon, secretary.

Maine, Ellsworth. Men from Pawtucket, R. I., interested in a plush manufacturing plant have been here and are said to have been looking for a site for a plush mill.

Maine, Waterville. There is no truth in the report that the Fabyan Woolen Co., whose plant at Stafford Springs was burned some weeks ago, would locate at Greystone, taking over the water privilege and old factory buildings. The Fabyan Woolen Co. advise that they know nothing of any such project.

*Massachusetts, Fall River. John M. Whittemore will be superintendent of the plant of the Annawan Mills, Inc., which as noted previously will handle the waste of some of the local cotton mills. The buying will be attended to by W. F. Shove, treasurer of the company.

Massachusetts, Franklin. Mann & Buckley have found the shoddy plant of George R. & A. D. Whiting at Unionville too small for their needs and are now negotiating for a lease of the Waite Mill on Alpine Place. Very likely they will be able to secure it and occupy it for a year, manufacturing shoddy. The company has not as yet decided whether to rebuild their shoddy plant at City Mills recently destroyed by fire.

Massachusetts, Great Barrington. It is reported a change will be made in the management of the Edgemere Mfg. Co. and that the name will be changed to Barrington Mills. It is proposed to place the plant and business in the hands of a new company which will further develop it. The reported plan of reorganization includes the issuing of $60,000 in first mortgage bonds, $40,000 of which will be turned over to the Riverside Mills Co. in payment for the plant, also the issuing of $40,000 in 6 per cent. second mortgage bonds. The Riverside Mills Co. will accept $40,000 for the property and it seems likely that the plan will be carried out and the business enlarged.

*Massachusetts, Lawrence. The new waste company organized a few weeks ago is known as the Northern Waste Co. A manufacturing plant will not be operated, only selling waste. James J. White, Jr., is president. Offices will be established in Boston.

Massachusetts, New Bedford. It is understood that the Beacon Mfg. Co. is considering the erection of a new mill in the spring which will practically double the present output. Napped cotton goods are the product.

Massachusetts, New Bedford. The New Bedford Waste Co., Inc., has been granted a charter with capital stock of $10,000 and succeeds a local concern of the same name which willows, dusts and cleans cotton waste. The officers are: Wm. Kearsley, New Bedford, president; Louis Green, Boston, treasurer. Samuel H. Waldstein, Boston, a waste dealer, is also interested. The offices of the corporation will be located in Mr. Waldstein's present office at 170 Summer St.

Massachusetts, Palmer. The Ford-Hawkes Co. has been incorporated with capital stock of $10,000 and succeeds to the business of Ford, Hawkes & Co. There will be no change in the plant. John T. Ford has been elected president, and H. W. Holbrook, treasurer and buyer. The concern manufactures shoddies and wool extracts.

Massachusetts, Westboro. A new sprinkler system has been installed in the plant of the Westboro Weaving Co., including the erection of a water tank on the top of the building.

Massachusetts, Worcester. The Dudley Mills Co. has been incorporated with capital stock of $25,000 to take over the small weaving plant of Philip E. Dudley, a manufacturer of silk and cotton fabrics. Mr. Dudley is president and treasurer and Harold F. Sherman is superintendent.

Mississippi, Natchez. The Natchez Retail Merchants' Association has decided to conduct an inquiry for the purpose of finding if there is not some way by which the Natchez Cotton Mills Co. can be reorganized and receive the benefit of tax exemption granted new industries. The plant has been closed for several months.

*Mississippi, Robinsonville. L. K. Salsbury, president of the Mary Mac Plantation Co., advises that nothing definite has been decided as yet in regard to the project to locate a cotton mill in Robinsonville, and until it is known whether the proposition will be carried through, no information will be made public. The offices of the Mary Mac Plantation Co. are at rooms 1213-1218 Central Bank Bldg., Memphis, Tenn.

New Hampshire, Belmont. The carding and spinning departments of the Ipswich Mills, Gilmanton Dept., have been shut down indefinitely.

New Hampshire, Epsom. The Barmen Webbing Co. is operating day and night to fill orders.

New Hampshire, North Salem. It is rumored that a Boston man interested in braid manufacture contemplates purchasing the plant of the Atlas Mfg. Co. and will establish a braid mill here. All the stock has been run out of the machinery and the mill has been shut down finally as far as the Atlas Mfg. Co. is concerned.

New Jersey, Paterson. Ball Bros. are moving the annex which they had in the Day Mill to their own mill building recently occupied by Inglis & Co.

New York, Brooklyn. The United Silk Waterproofing Co. has been incorporated with capital stock of $5,000 to waterproof silk and other fabrics. Jacob Manne, Samuel Manne, 550 7th St. and Moses Hiller, 1090 E. 17th St., Brooklyn, are the incorporators.

New York, Buffalo. The Preston Fabric Tire Co. is out of business. Automobile tire fabrics, cotton fire hose and cotton belting were manufactured.

New York, Groveville. The Loeb, Schoenfeld Co. of Camden, N. J., manufacturers of curtains and fancy embroideries, have arranged to purchase the Groveville Carpet Mills, formerly operated by A. T. Stewart of New York department store fame, The mills have been closed since 1893. The main plant of the Loeb, Schoenfeld Co. is in Switzerland, while the plant at Camden is a branch. It is understood it is planned to do all manufacturing in this country at Groveville. The Loeb, Schoenfeld Co. has capital stock of $1,250,000 and operates 50 looms and 350 sewing machines. Max Schoenfeld is president; David Schoenfeld, vice-president; Louis Loeb, treasurer; Arthur Kuhn, secretary and Ferdinand A. Loeb, superintendent and buyer. The New York office is at 451 Broadway.

New York, Matteawan. Ludwig Littauer, 109 Greene St., New York City, has purchased from the widow of Arthur V. Rockwell the silk throwing plant at Matteawan,, and is operating it to its full capacity. It is said this gives Mr. Littauer a total of about 30,000 spindles.

*New York, Mechanicsville. The damage caused by the recent fire in the shoddy mill of Frank G. Ferris has been repaired and manufacturing has been resumed. The loss was fully covered by insurance. A short time ago a new department was added for the manufacture of comfortables and comfort bats, the space formerly used for dyeing being equipped for this purpose. At present no dyeing is done.

New York, Minetto. It is again reported that the Minetto-Meriden Co., manufacturers of shade cloths, will build a large cotton mill, probably in Oswego. The project said to be under consideration is very extensive and if carried out will give employment to 3,000 hands.

New York, Newburgh. Garner & Co. have sold the Newburgh Steam Mills to the Coldwell Lawn Mower Co., whose plant was recently burned. The cotton machinery is to be sold and the mills used for manufacturing horse and hand lawn mowers and automobile lawn mowers. The equipment of the mill includes 13,000 mule and 13,000 ring spindles and 600 looms. There has

been a rumor that Wm. Crabtree & Sons would take over the old Coldwell plant and remove their Newburgh branch into the building. This rumor probably started from the fact that several months ago Wm. Crabtree & Sons planned to build a new mill in Newburgh and later abandoned the project. From investigation we learn that there is no truth in the statement that they are negotiating for the Coldwell plant and they have never considered the matter of purchasing it or moving into it.

*New York, New York City. The plant of the Liberty Lace & Netting Works will be at 229th St. and Bronxwood Ave., Williamsbridge, and the office at 11 E. 16th St.

New York, New York City. The International Cotton Mills Corp., reported incorporated last July, has taken over the controlling interest in the Consolidated Cotton Duck Co., the Bay State Cotton Corp. and the Boston Yarn Co., and it is understood owns outright the capital stock of the J. Spencer Turner Co. It is a holding company for these corporations and the mills which they operate. Authorized capital is $20,000,000, $10,000,000 first preferred and $10,000,000 common stock, the preferred stock being 7 per cent. cumulative and non assessable. There is invested new cash capital of $1,500,000 in addition to which the company holds a controlling share of the capital stock in the corporations named of nominal value of about $69,000,000. The officers are Myron C. Taylor, president; Chas. M. Warner, vice-president; Thomas M. Turner, vice-president; P. T. Jackson, Jr., vice-president; Augustus P. Loring, treas., and David H. Carroll, secretary. The New York office is at 86 Worth St. and the Boston office 840 Exchange Bldg.

New York, New York City. The White Silk Braid Co. has been incorporated with capital stock of $12,000 by Nathan and Julia Silverman, 410 Lenox Ave. and Josephine Mooney, 31 West 25th St., New York City.

New York, Oswego. It is reported that the Mohawk Manufacturing Co., formerly manufacturing woolen yarns with 15 sets and 5 pickers, are offering their entire equipment for sale.

New York, Pleasant Valley. Following the rumor of several days ago that Garner & Co. would start up the Pleasant Valley Cotton Mill on print goods, has come the report that the rumor was incorrect.

New York, Shushan. The Eagleville Woolen Mill is running overtime on orders. Horse clothing and blankets are manufactured.

New York, Wappinger's Falls. The Garner Print Works & Bleachery have installed 40 sewing machines in their local plant for the manufacture of sheets and pillow cases.

New York, Waverly. It has been found necessary to increase the power capacity of the Waverly Silk Ribbon Co. and manufacturing will not be started until this addition is made. Six looms are being installed and 6 additional looms will be set up. Henry Giddon of Paterson, N. J., will be superintendent of manufacturing.

North Carolina, Burlington. It has been decided to change the name of the Hopedale Mills Co. to the J. N. Williamson & Sons Co. The plant is being operated in connection with the Ossipee Mills of J. N. Williamson & Sons at Elon College.

*North Carolina, High Point. Stelhi & Co.'s addition of a weaving department to the local plant is in the nature of an experiment, the machinery being moved from the Paterson (N. J.) annex. This does not mean that the Paterson plant will be closed.

North Carolina, Shelby. The Belmont Cotton Mills Co. has found it necessary to increase the output by putting on a night force. Cotton yarns are the product.

North Carolina, Thomasville. Machinery is arriving for the Jewel Cotton Mills and is being set up under the supervision of Chas. H. Boyd, superintendent.

Pennsylvania, Chester. The Chester Worsted Co. has made an assignment to James A. Campbell, president of the Delaware Trust Co. of Chester, for the benefit of creditors. Mr. Campbell has stated that negotiations are in progress for the reorganization of the company which if effected will insure the payment of cash in full to creditors. It has been reported that Geo. C. Hetzel, president of the Geo. C. Hetzel Co., worsted manufacturers of Chester, was connected with the proposed reorganization.

Pennsylvania, Hazleton. The Hazleton Bleach Works, of which A. J. Kummerer & Son are the proprietors, report that they are extremely busy on all classes of knit goods and cotton piece goods. Many improvements have been made to the plant and they are in a better position now than ever before to handle their business, which is coming in from all parts of the country.

Pennsylvania, Philadelphia. It is reported that the equipment of the Valkone Dye Works, of which C. Sullivan is the proprietor and in which he dyed and finished piece goods, has been sold by the David M. Hess Estate for the sum of $5,800 to satisfy a rent claim of $8,000, most of the equipment being bought in by the Hess Estate. The plant is located at Mascher and Turner Sts.

Pennsylvania, Philadelphia. John Graf's Swiss embroidery works now at 2d and Walnut Sts., where 11 embroidery machines are operated, have leased the 6th floor of the building at 1001 Hamilton St. and will remove there.

Pennsylvania, Philadelphia. Baxter, Kelley & Foust, Inc., who have been occupying the rear portion of the Coulter Building at Jasper and York Sts., for the manufacturing of cotton plushes with 20 looms, have removed the plant to their new building at Tioga St. The product of the plant is dyed and finished and sold through their New York offices.

Pennsylvania, Philadelphia. The John H. Hughes Co., with offices and warerooms on 8th St., below Germantown Ave., for the sale of cotton and mercerized yarns, and a plant at 216 W. Dauphin St., equipped with coners, winders and reelers, are arranging for the consolidation and removal of both plants to 2554-86 North 3d St., which are now being made ready. They expect to be in their new quarters after the first of the year.

Pennsylvania, Philadelphia. The Star Mills Manufacturing Co., have opened up offices at 2000-12 Adams St., where they are doing a business of selling towels, rugs, lace curtains, portieres and couch covers direct to the consumer. Their product is made up on commission by other manufacturers.

Pennsylvania, Philadelphia. The four story and two story factory buildings at Emerald and Adams Sts., 95 by 150 feet, have been sold by Job Batty's Sons, its present owners, to Harry J. Porter, for the sum of $12,610.78, subject to a mortgage of $20,000. The assessed valuation of the property is $23,000.

Pennsylvania, Philadelphia. The R. J. Ederer Thread Co., with a capital of $75,000, Arthur Loeffler, pres.; Louis B. Ederer, vice-pres.; Samuel Corkran, treas., and Keith K. Skene, sec., have succeeded the Courtrai Linen Thread Co., at Unity and Elizabeth Sts., Frankford. The new corporation is manufacturing threads of silk, ramie, linen, cotton, etc., and report a good business.

Pennsylvania, Philadelphia. The Franklin Winding Co., owned and operated by A. J. and E. O. Franklin at 1543 Ruan St., Frankford, reports an active business. The plant, which was started up about a year ago, is equipped with long chain quilling machines, cone and skein winders, on which they make a specialty of coning and winding for the knitting trade.

Pennsylvania, Philadelphia. Joseph H. Margerison, whose Belmont Mills at Fox Chase were recently destroyed by fire, has purchased from F. Werner & Sons Co., the equipment of the Turkish towel plant formerly run by them in conjunction with their carpet manufacturing business at Glenwood Ave. and 2d St. Mr. Margerison is having erected a new building to take the place of the old one and when it is completed the new machinery will be installed at once.

Pennsylvania, South Bethlehem. The South Bethlehem Fast Black Dye Works, formerly operated by J. F. Graf, have been taken over and consolidated with the Excelsior Knitting Mills owned by George D. Dobbins and are now being operated as the dyeing department of the mill.

Pennsylvania, Weatherly. Two men were killed and the plant of Read & Lovat Mfg. Co. was greatly damaged by the explosion of a boiler in the power plant.

Pennsylvania, York. The Monarch Silk Co.'s plant has been sold by the sheriff to M. S. Niles, representing the bondholder's committee of the York Silk Mfg. Co. This is another step in the reorganization of the York Silk Mfg. Co.

*Rhode Island, Niantic. The English concern which it has been rumored would purchase the Niantic Dyeing Co.'s plant has acquired what is known as the Asher farm and valuable water privileges, preparatory to building a $1,000,000 bleaching plant. The concern is said to have a capitalization of $10,000,000 and operates several plants in England and on the continent.

*Rhode Island, Wakefield. The following officers have been elected by the Wakefield Mills Co., a new corporation which has succeeded the Wakefield Mfg. Co.: R. L. Broome, president; W. J. Taylor, treasurer, and F. C. Patterson, vice-president, general manager and buyer. The plant contains 5 sets of cards and 22 looms operated on all wool suitings and overcoatings and there will be little change made at the present time. The new company will begin manufacturing about January 1.

Rhode Island, Woonsocket. The mill of the Paragon Worsted Co. on South Main St. has shut down, the business having been moved to the Earnscliffe plant at Providence, recently purchased by the Paragon Worsted Co.

South Carolina, Cheraw. It is reported that L. L. Prince of St. Louis is interested in a plan to build a cotton mill at Cheraw.

South Carolina, Columbia. It has been rumored that the Massasoit Mfg. Co. of Fall River, Mass., will operate a branch in Columbia. A factory building has been purchased, but the company has not as yet fully decided what to do with it, the purchase having been made for investment as much as anything. It may be later on utilized in their business.

*South Carolina, Greenville. The Parker Cotton Mills Co. has been incorporated with capital stock of $5,000,000. This refers to the merger of the cotton mills in Greenville, Columbia, Greer, Arlington and Edgefield, headed by Lewis W. Parker. In an earlier report it was stated that the capitalization would be $10,000,000. The officers have been given previously.

Tennessee, Knoxville. It has been decided to sell the plant of the Knoxville Woolen Mills and the property has been advertised for sale. Several weeks ago it was reported that the directors had decided to discontinue manufacturing.

Tennessee, Shelbyville. W. J. McGill and associates are interested in a plan to locate a weaving mill in Shelbyville, and are now making plans for quarters and equipment. They propose to drive the looms by electric motors.

*Virginia, Basic City. A charter has been granted the Basic City Woolen Co., with capital stock of $100,000. Among the incorporators are W. H. Gardner, treasurer, and Hiram Dawson, general manager and buyer. The new corporation began manufacturing in November, taking over the Blue Ridge Woolen Mill, as reported several weeks ago. The firm of Marden, Orth & Hastings, Boston, dealers in oils, are interested in the new corporation as stockholders. Business has been begun with paid in capital of $50,000.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Design Texts; by Fenwick Umpleby, principal of the Bradford-Durfee Textile School, Fall River, Mass.; 239 pages, 6 by 9 1/2; published by the author. Price $2.50.

This book owes its value to the fact that it is prepared by one who combines mill experience with theory. Beginning with the simplest weave construction the author leads up gradually and systematically to the more complicated weaves, all of which are described in clear language and illustrated with excellent drawings. The part relating to weaves is followed by a lecture on color as applied to texture. A chapter on textile arithmetic deals with the weights, measures and yarn counts in the textile industry. Rather more space is devoted to the metric system than is warranted in a work intended for those who do not use that system, but on the whole this part of the subject is very well handled. There is a valuable chapter on specifications for woolen and worsted fabrics, dealing with shrinkage and take-up. The work includes a large collection of weave drafts arranged in systematic order. Then comes a chapter on the dissection of fabrics. It is a book of value not only to the student but also to the superintendent, designer and overseer.

The Textile Industries; by William S. Murphy, assisted by leading experts in textile technology; vol. 5, 176 pages, 6 1/2 by 10; Gresham Publishing Co., 34 Southampton St., Strand, London, Eng. Price per volume $3.00.

The preceding volumes of this elaborate work have already been reviewed in our columns. Volume 5, which comes up in every way to the high standard of the earlier volumes, comprises the following chapters: The Tappet System of Warp Shedding; The Dobby; The Jacquard; The Reed or Sley; The Weft Mechanism; Minor Loom Mountings; The Going Part; Automatic Weaving.

This is a work that must be seen to be appreciated and we invite all who are interested to call at our Boston office and inspect the volumes at their leisure.

The Cotton Industry in Switzerland, Vorarlberg and Italy; by S. L. Besso, LL. B., 229 pages, 5 1/2 by 9. Longmans, Green & Co., New York. Price $1.50.

This is the latest Gartside Report coming from the press. As many of our readers will recall, these reports are prepared by the Gartside scholars at the University of Manchester. This scholarship was established in 1902 by John Henry Gartside. The requirements of the scholarship are that after one session at the University the time must be devoted to the examination of subjects bearing upon commerce or industry in Germany, Switzerland or the United States, and by special permission in other countries also. The student selects some industry and after making his investigation prepares the report. Mr. Besso's report gives a general account of the cotton industry in Switzerland, Vorarlberg and Italy. It deals with the different branches of spinning, weaving and related industries, making a study of the labor and industrial organizations, social conditions, wages, trade organizations and commercial organizations.

Flax, Hemp and Jute Spinners' Catechism; by H. R. Carter, 268 pages, 5 1/4 by 8 1/4. Bale & Danielsson, Ltd., London, England. Price $2.

This book consists of a collection of questions and answers based on papers used for the annual examinations in flax and jute spinning in connection with the City and Guilds of London Institute. The questions are classified under the following heads: Origin of Flax, Hemp and Jute Fibers; Raw Fiber Markets; Piecing Out, Roughing and Hand Dressing; Machine Hackling; Sorting; Slivering or Spreading; Carding; Drawing and Doubling; Tow Combing; Gill Spinning; The Roving Frame; Wet and Dry Spinning; The Yarn Department; Hank Drying, Conditioning and Bundling.

Business Literature.

The Westinghouse Diary for 1911; Westinghouse Electric & Manufacturing Co., Fittsburg, Pa.

In addition to the diary this booklet contains much valuable data relating to electrical equipment and steam turbines, which manufacturers and engineers will find of value for ready reference. The index enables the data relating to any subject to be readily found.

Friction Clutches; Catalogue "E," 1911, 35 pages; The Carlyle Johnson Machine Co., Manchester, Conn.

This catalogue is filled with attractive illustrations showing the Johnson clutch, factory views, etc. The catalogue is larger and more complete than previous ones, and deals almost exclusively with the driving of machinery through friction clutches, special attention being paid to the driving of machinery from line shafting, thus eliminating cross belting, countershafting, etc. There is special mention made of clutches for cut-off coupling work for use in connection with marine motors, as a one-way clutch for which work this type of clutch is particularly adapted. The lists are very complete, extending to clutch parts, which are numbered to correspond to the numbers indicating the parts on sectional views. Copies will be sent free to interested parties.

Calendars for 1911.

Textile Machine Works, Reading, Pa., are sending out to the trade a large wall calendar which would be an ornament to any office.

The Draper Company's calendars for 1911 are in the same attractive form as in previous years. The weekly and monthly calendar shows an embossed reproduction of the Norfolk loom in colors and the first sheet of the calendar is a handsome etching from a sky photograph of the Draper Company's works. The calendar is arranged so that the days of the month are shown on a sheet, followed by a calendar for the following weeks

with spaces for memoranda and call up notes. This is the only calendar that we have seen with this particular form of arrangement. They also furnish the big daily renewal pads for the calendar issued several years ago.

Thomas Wolstenholme Sons Co. of Philadelphia are issuing a big daily calendar with attractive mounting. This can be seen across the largest office and is a good advertising feature as well as most useful to its recipients.
Raymond D. Borden of Fall River.

An attractive calendar showing a wind-mill in the old Dutch town of Edam, which is attractive, whether for the home or the office, being in very soft, harmonious tones.

The Dinsmore Mfg. Co., Salem, Mass., manufacturers of mill sewing machines and supplies, send their New Year greetings in the form of a calendar showing the reproduction of a painting by Lamasure, entitled "A Virginia Sunset." The picture itself and the coloring are most attractive.

A. W. Buhlman, textile engineer, 487 Broadway, New York, is sending out a Christmas and New Year's reminder in the form of an attractive memorandum book containing not only daily memo spaces, but much other printed information of interest and reference value, as well as maps of the world.

The R. H. Hood Co., 1842 Germantown Ave., Philadelphia, Pa., manufacturers of wool comb circles and fallers, are sending out to the trade a large wall calendar on which is reproduced by color photography, a beautiful picture entitled "Old Friends are the Best," showing a pack of hunting dogs caressing their master.

The Whitin Machine Works, Whitinsville, Mass., builders of cotton machinery, are sending out to the trade a large wall calendar on which is an excellent photograph of their works.

Speed & Stephenson, 170 Summer St., Boston, Mass.
A very handsome calendar which is a reproduction of the well known painting by Dobson entitled "The New Arrival," and which would be an ornament to the home or office.

Starches.

The Arabol Mfg. Co., 100 William St., New York, are among the largest manufacturers of starches, sizing compounds, softening oils, softeners and related articles for all branches and varieties of textile manufacture. We have already mentioned their latest addition to the line of softeners, to which they gave the name of Bellicosa. They are well equipped by machinery, laboratory, practical experience and scientific management to give satisfactory service to manufacturers. They make it their specialty to meet any particular conditions of manufacturing.

Climax Machine Co.

Announcement is made that George J. Wolf has become an equal partner in the business of the Climax Machine Co., 1753 N. Howard St., Philadelphia, and will have charge of the financial end of the business. This concerns manufactures a patent attachment for circular rib and flat knitting machines and they now propose to increase their facilities and have arranged with a number of foreign and domestic machinery concerns to act as their selling agents, which will enable them to furnish complete equipments where possible. They are developing and will soon have on the market a new attachment applicable to seamless hosiery machines which will automatically run in a hard twisted yarn and linen in the making of heels and toes and also in extra splicing for garters on ladies' hosiery, which gives so much more strength and durability and has proven such a popular feature in the past few seasons.

New Philadelphia Show Rooms.

The Jenckes Knitting Machine Co., manufacturers of the "Invincible" knitting machine, with headquarters at Pawtucket, R. I., have changed their Philadelphia office from 63 Arch St. and have opened show rooms at 1211-1217 Filbert St., Philadelphia.

Box Shooks.

Within the last few months a number of textile manufacturers have waked up to the saving that can be made by buying their boxes in shook form direct from the manufacturers. The Peart, Nields & McCormick Co., Harrison Building, Philadelphia, who have been making a specialty of this business for textile mills, inform us that they have sold a good many carloads lately to knitting, woolen and cotton manufacturers who have placed orders for the first time, after investigating the subject and learning what a substantial saving can be made. They own their own timber land, saw mills and box shook factories, so the textile manufacturer gets as close to the raw material as is possible.

Cash Buyers of Knit Goods.

Ellis Brothers, 533 Market St., Philadelphia, have been making some changes in their salesrooms and warehouses in anticipation of large business for the coming year, so that they can handle a larger assortment with greater ease. They are jobbers of hosiery and underwear and dispose of a large quantity of merchandise every year. They are in the market at all times for goods either in an unfinished or finished state or in the grey, and are always interested in special lots of merchandise for prompt cash.

Napier & Herrick, 346 Broadway, New York, selling agents for underwear and sweater coats, have recently been compelled to double their office space to take care of their increasing trade.

Textile Exhibitors' Association Fills Vacancies.

At a recent meeting of the executive committee of the Textile Exhibitors' Association two new members were elected to the executive committee, viz: Frank B. Comins, treasurer and manager of the American Moistening Co. of Boston, and L. E. Tracey, New England manager of the Chicago Raw Hide Belting Co. The secretary of the Association will soon communicate with the members and others in the textile machinery trade for the purpose of getting an expression of opinion as to when and where the next exhibition will be held.

Installed Gormly Machines.

Owing to an increase in business the Anchor Knitting Mills, owned by Robert Ablett, found it necessary several months ago to enlarge the plant and had plans prepared for a 3-story and basement addition. While construction work was in progress careful attention was paid to the matter of machinery equipment and it was decided to install twelve up-to-date knitting machines built by Robt. W. Gormly & Co., Troy, N. Y., manufacturers of spring needle knitting machines, burrs and supplies of every description. The addition has been completed and the machinery has been delivered by Robert Gormly & Co. and installed.

Portable Tiering Machines.

The New York Revolving Portable Elevator Co., manufacturers of a portable tiering machine for stacking bales, boxes, etc., and known as the "Revolvator," whose plant suffered complete destruction by fire on October 3, 1910, now have in course of construction a new factory which will in every way be superior to their old plant. The new building will have every modern convenience, and with new machinery, run by individual motors, the capacity will be three times that of the old plant. At the rate they are now booking orders for future delivery, it would seem as if the new works would be worked up to the full capacity from the start. Having plenty of ground for expansion, the business may be enlarged to take care of a still increasing demand. The new location is within a few hundred feet of the old property, near the Greenville (Jersey City) station of the Central R. R. of N. J.

This company are now publishing new descriptive literature on their apparatus, which can be obtained by applying to the new address.

Some Carded Cotton Facts.

An attractive pamphlet "published in the interests of fair play" by the Wonalancet Company, Nashua, N. H., gives some interesting information concerning the use of carded cotton by woolen mills. There is just as much difference in carded cotton as there is in the different grades of wool and the woolen manufacturer to whom all cotton looks alike and who thinks it is only a question of price will find something to interest him in this pamphlet.

Rateau-Smoot Turbines and Generators.

In addition to building Rateau-Smoot turbines of the high and low pressure types, The Ball & Wood Co., Elizabethport, N. J., announces by means of this catalogue that they also build these turbines, which are of the impulse type, for mixed flow pressure. The new type consists of a straight low pressure turbine with supplementary wheels to use economically high pressure steam by means of an automatically controlled governor.

A Big Equipment.

The Murphy Iron Works, of Detroit, have recently secured an order from the American Sugar Refining Co. for Murphy furnace equipment for twelve 500 h. p. B. & W. boilers to be installed in their new power house at Boston, Mass. This is to be one of the most complete plants of its kind in the United States, and their decision regarding mechanical stokers was reached because of the excellent results obtained by the Murphy furnaces installed in connection with 36 B. & W. boilers at their refinery at Chalmette, La., which is one of the largest refineries in the United States. The furnaces were installed in this plant after a thorough investigation extending over a period of fourteen months, and the results obtained are such they felt justified in placing their order with this company for the equipment of their Boston plant.

The year 1910 has shown the largest volume of business received by the Murphy Iron Works since its organization thirty-three years ago and the prospects are excellent for the coming season. They recently opened an additional office in Minneapolis in the Boston Block, in charge of W. A. Sharp and the northwestern business will be handled from that office.

New Brunswick's Youngest Industry.

The M. Q. S. Co., manufacturers of sheet metal pressings, web holders, sinkers, dividers, etc., catering to the knitting trade, is one of the most recent industries to be incorporated in New Brunswick, N. J. The company has already started operations under the most favorable conditions, and is shipping goods all over the country. The officers are: Mr. Louis A. Schmalholz, president; Mr. E. A. Quint, treasurer, and Mr. Chas. H. McGinnis, Jr. (for sixteen years foreman of the sheet metal department of the L. T. Ives Co.), secretary. They are all practical men and know the needs of the trade.

The Arabol Mfg. Co. have established depots of their own in St. Louis, St. Paul, Chicago, Cincinnati, Pittsburg and Baltimore, in addition to their main office in New York. Arabol starch can be obtained at uniform prices at any of these depots or through any dealer. The Boston depot is in charge of the Woodley Soap Mfg. Co.

New York, Hagaman. The Star Hosiery Mills of L. E. Harrower have resumed manufacturing after a shutdown of two months.

Recent Textile Patents.

BOBBINS. Machine for Applying Split Rings on the Butts of. 979,438. Dana S. Courtney, Chicopee, Mass.

BRAIDING MACHINE. 979,446. Gustav Dingendahl, Wyomissing, Pa.

BRAIDING MACHINE. 979,502. Henry Jansen and Robert C. Rahm, Wyomissing, Pa.

CARDING MACHINE Feeding Device. 977,502. Eddo V. Bates, Lowell, Mass.

CARDING MECHANISM. 978,998. George F. Geb, Franklin, Mass.

CARDS. Machine for the Production of Jacquard. 979,128. Ramon T. Carbonell, Barcelona, Spain.

CLOTH CUTTING and Measuring Machine. 979,963. James A. Killian and George M. Kennedy, Hamburg, Ark.

COMBING MACHINE. 979,389. Alfred B. Evans and Frank Marcaurele, New Bedford, Mass., and Frank R. Langlois, Woonsocket, R. I.

CARBONATING APPARATUS. 977,467. John C. Murphy, Chelsea, Mass.

DETACHABLE SPINDLE. 978,096. Charles B. Wilson, Bartow, Fla.

EMBROIDERING MACHINE. Jacquard for 979,964. Hohann J. Knecht, Chemnitz, Germany.

FABRIC MAKING Apparatus. Textile. 978,883. Eduard Heberlein, Wattwil, Switzerland.

KNITTING MACHINE Pattern Device. 977,852. Edgar C. Chandler, Philadelphia, Pa.

LACE TIPPING Machine. 979,168. William H. Joslin and Manfred H. Bennett, Scituate, R. I.

LACE MAKING Machine. 979,770. Gustav Krenzler, Barmen, Germany.

LOOM TEMPLES. Holding Device for. 979,774. Charles A. Littlefield, Lowell, Mass.

LOOM. 979,718. Melvin L. Stone, Lewiston, Me.

LOOM for Weaving Tapes, Ribbons and Similar Fabrics. 979,594. Arthur E. Stroud, Derby, England.

LOOM THREAD Parting Mechanism. 979,779. James Marcure, Pawtucket, R. I.

LOOM. 977,898. Julius Pribonsky, Passaic, N. J.

LOOM SHUTTLE. 977,840. Charles Rafferty, Fall River, Mass.

SHUTTLE. Thread Cutting. 979,282. Theodore J. Garisio, Allentown, Pa.

SHUTTLE. 979,203. Wellington N. Reiff and James A. Krauss, E. Greenville, Pa.

SHUTTLE. 980,093. Theodore J. Garisio, Allentown, Pa.

SHUTTLE THREADING Means. 979,865. H. L. Litchfield.

SILK. Manufacture of Artificial. 978,878. Giuseppe Guadagni, Pavia, Italy.

SILK. Apparatus for the Manufacture of Artificial. 977,863. Giuseppe Guadagni, Pavia, Italy.

SPINDLE or Twisting Apparatus. Spindle Brake for. 977,751. Alonzo E. Rhoades, Hopedale, Mass.

SPLIT RINGS on the Butts of Bobbins. Machine for Applying. 979,438. Dana S. Courtney, Chicopee, Mass.

THREADING MACHINE. 979,152. Harry E. Gross, Knoxville, Pa.

THREADS. Apparatus for Use in the Manufacture of Artificial Silk and Like. 979,434. James Clayton, Coventry, England.

WINDING CONES and Tubes. Machine for. 980,069. John S. Coram, Lowell, Mass.

Recent Textile Trademarks Registered.

"Valentines." Silk goods in the piece. The Valentine & Bentley Silk Co., Newton, N. J.

"Maisaline." Cotton piece goods. The Chas. A. Maish Co, Cincinnati, O.

"Patricia." Woolen, worsted, cotton, silk fiber, etc. Geo. G. Geer, New York.

"Indita." Woolen, worsted, mohair fiber, etc. Geo. G. Geer, New York.

"Priscilla." Woolen, worsted, silk, mohair, etc., fiber. Geo. G. Geer, New York.

"Essex Mills." Men's, women's and children's knitted shirts, drawers, union suits, etc. Brown Durrell Co., Boston, Mass.

"Barbour's." Linen thread. The Barbour Bros. Co., Paterson, N. J.

"H." Laces. Alb. & E. Henkels, Langfeld, Germany.

"Pluvetts." Waterproofed and spot-proofed silks. Rogers & Thompson, West New York, N. J.

"9 o'clock." Hosiery. Central Knitting Co., St. Louis, Mo.

"Perfexa." Tulles. Gros. Million & Cie, Lyon, France.

"Ivanhoe." Textile drapery fabrics. Catson, Pirie, Scott & Co., Chicago, Ill.

"900." Stockings. O'Callaghan & Fedden, New York.

"Lynflex." Cotton, silk and wool piece goods. Baltimore Bargain House, Baltimore, Md.

"Johnson." Percale. Ely & Walker Dry Goods Co., St. Louis, Mo.

"Buffalo." Hosiery. Danville Knitting Mills, Danville, Va.

"American Beauty." Embroidery flosses. Meyer, Martin & Danda, New York.

"Boss of the Road." Coats, blouses, etc. Neustadter Bros., San Francisco, Cal.

"Sealskinette." Velvets and plushes. The Salt's Textile Mfg. Co., Bridgeport, Conn.

"N C M." Dress, negligee, work shirts, overalls, etc. Salant & Salant, New York.

"Bridge-Over." Boys' coats, pants and vests. Brill Bros., New York.

"Mermaid." Chiffons and malines. Stern & Stern, New York.

"Climax." Woolen and cotton hosiery. Jacob L. Frankel, New York.